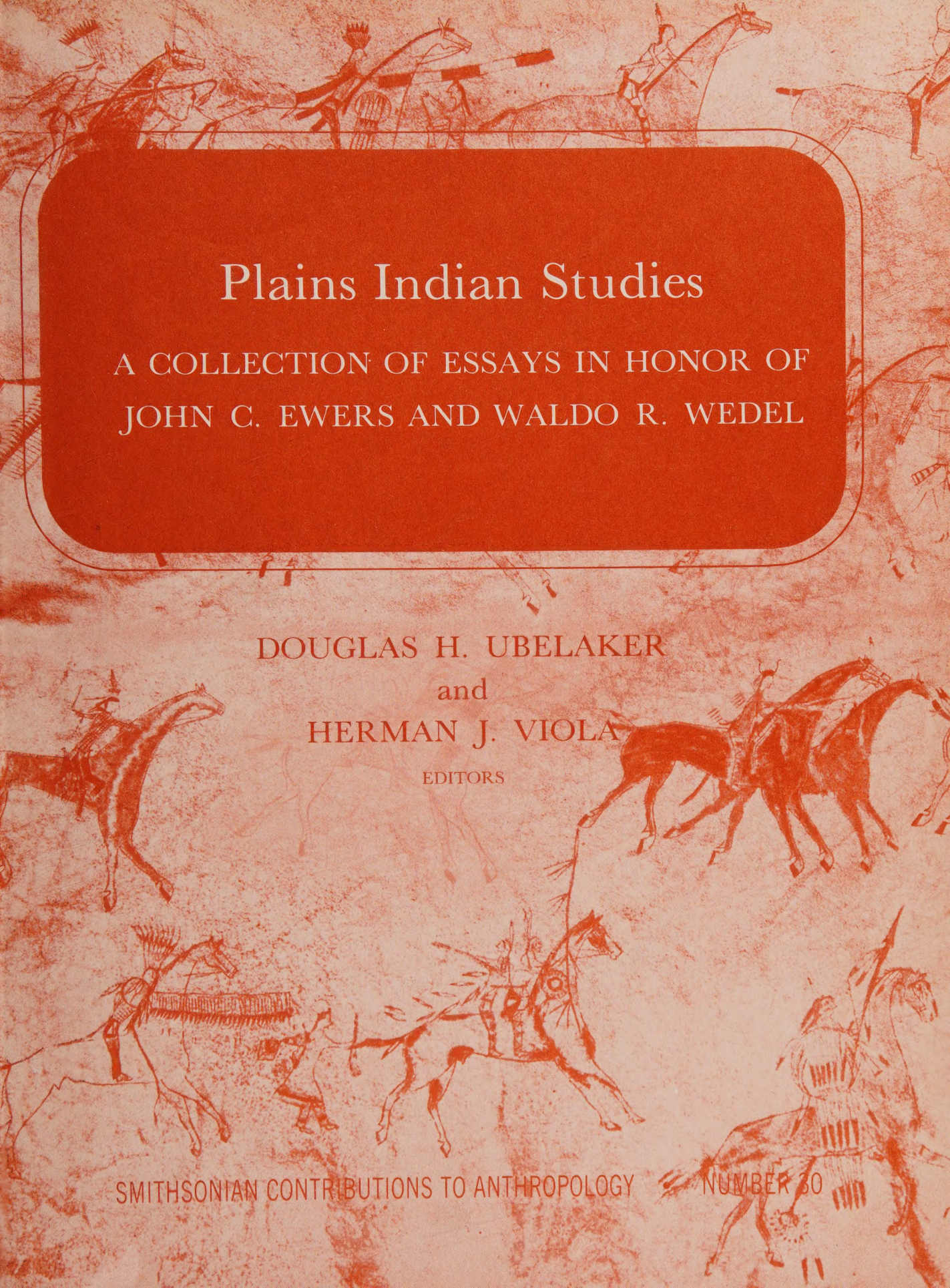

Plains Indian Studies

A COLLECTION OF ESSAYS IN HONOR OF JOHN C. EWERS AND WALDO R. WEDEL

DOUGLAS H. UBELAKER
and
HERMAN J. VIOLA
EDITORS

SMITHSONIAN CONTRIBUTIONS TO ANTHROPOLOGY NUMBER 30

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SMITHSONIAN CONTRIBUTIONS TO ANTHROPOLOGY • NUMBER 30

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SMITHSONIAN INSTITUTION PRESS
City of Washington
1982

ABSTRACT

Ubelaker, Douglas H., and Herman J. Viola, editors. Plains Indian Studies: A Collection of Essays in Honor of John C. Ewers and Waldo R. Wedel. *Smithsonian Contributions to Anthropology*, number 30, 218 pages, 35 figures, 4 tables, 4 plates, 1982.—Much of our knowledge of the ethnology, material culture, and prehistory of the Plains of the United States can be linked with the careers and careful research of the Smithsonian's John C. Ewers and Waldo R. Wedel. Following their retirement, the Smithsonian chose to recognize their outstanding contributions to science by sponsoring a two-day symposium in their honor. The essays in this volume result from that symposium and are designed to illuminate both the diversity of their interests and the intensity of their research efforts. Biographical sketches of both men are provided by William N. Fenton and James H. Gunnerson, followed by their complete bibliographies. Smithsonian historical perspective is added by T.D. Stewart. The remaining essays focus on original research that relates to their career interests conducted by individuals whom they have influenced. These authors and their subjects are Douglas R. Parks on the scalped man character in Arikara and Pawnee folklore, Thomas R. Wessel on problems of adaptation among the Blackfeet Indians, Loretta Fowler on political developments among the Northern Arapahoe and Gros Ventres, Hugh A. Dempsey on the nature of band organization among nonhorticultural Plains Indians, James A. Hanson on the evolution of Plains garments during the years of initial Indian-White contact, Mildred Mott Wedel on the historical ethnology of the Wichita-speaking peoples in the southern Central Plains, David Mayer Gradwohl on the use of mussel shells in the removal of corn kernels for drying, Brian Hesse on problems of faunal analysis, John A. Hotopp on the Central Plains tradition in Iowa, George C. Frison on Paleo-Indian winter subsistence strategies, and Dennis J. Stanford on a review of the evidence for the early presence of man in the New World.

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no.30

OFFICIAL PUBLICATION DATE is handstamped in a limited number of initial copies and is recorded in the Institution's annual report, *Smithsonian Year*. SERIES COVER DESIGN: Sioux Indian hide painting depicting mounted warriers.

Library of Congress Cataloging in Publication Data
Main entry under title:
Plains Indian studies.
(Smithsonian contributions to anthropology ; no. 30)
Bibliography: p.
Supt. of Docs. no.: SI 1.30:30
1. Indians of North America—Great Plains—Addresses, essays, lectures. 2. Ewers, John Canfield—Addresses, essays, lectures. 3. Wedel, Waldo R. (Waldo Rudolph), 1908– —Addresses, essays, lectures. I. Ewers, John Canfield. II. Wedel, Waldo Rudolph, 1908– . III. Ubelaker, Douglas H. IV. Viola, Herman J. V. Series.
GN1.S54 no. 30 [E78.G73] 301s 81-607137 [978'.00497] AACR2

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FIGURE 1.—John C. Ewers and Waldo R. Wedel at the Smithsonian Symposium in their honor, 25 April 1980.

Plains Indian Studies

Editors' Introduction

Douglas H. Ubelaker and Herman J. Viola

Publication of this volume completes a project begun in late 1978 to honor John C. Ewers and Waldo R. Wedel, two distinguished emeritus curators in the Department of Anthropology at the Smithsonian Institution. Although Jack and Waldo had recently retired, they kept their offices and continued their research and writing about the ethnology and archeology of the Plains, much as they had been doing for the previous forty years. Indeed, both of these quiet and unassuming gentlemen had asked nothing more than to enjoy a tranquil retirement and to remain members of the community of scholars on the Mall.

But this could not be. Since both men had been outstanding scholars their entire professional lives and could claim a large part of the credit for the prestige and distinction that Smithsonian anthropology enjoys today, they obviously deserved special recognition. Accordingly, a departmental planning group of Kate C. Duncan (postdoctoral fellow), James A. Hanson (Office of Museum Programs), Sarah M. Quilter, William C. Sturtevant, and Douglas H. Ubelaker (staff members) met to exchange ideas and suggestions. Two symposia were first suggested, one in honor of Ewers and one in honor of Wedel. However, as the group discussed thematic and geographical coverage of each and the respective lists of possible scholars to be consulted, the overlap became apparent. The research of both men had focused on the Plains area of the United States, with Wedel concentrating on its prehistory as revealed through archeology and Ewers on its early history as gleaned from archival and ethnological sources. Through Wedel's use of the direct historical approach and Ewers' desire to trace history as far back as possible, the common ground emerged. Early in their years at the Smithsonian a symbiotic intellectual relationship grew between them, nurtured by their mutual respect for scholarship and knowledge. In addition they have remained good friends and continue to share information, ideas, and professional contacts. Accordingly, the planning group agreed upon a single symposium to honor them jointly.

At this point, the work of co-ordinating the symposium was turned over to Douglas H. Ubelaker and Herman J. Viola. They not only agreed to serve as organizers of the symposium, but also to edit the resulting publication. After receiving a financial commitment from the Smithsonian Institution, Ubelaker and Viola met with Ewers and Wedel to discuss topical coverage and potential participants. All agreed that presentations should be on topics within the geographical limits of the Plains area of the United States and the scholarly limits of the anthropology of Indians (including history, folklore, and linguistics). Besides meeting the above requirements, partici-

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pants were limited to long-time respected colleagues of Ewers and Wedel, whose research either complemented directly their own research interests or who could be considered their students. The number of scholars who met the above criteria was enormous. Although Ewers and Wedel have spent most of their professional lives in museum research positions, they have influenced many scholars and have a considerable intellectual following through their publications, field work, and continual willingness to share their time with scholars working in their respective areas. For years, their knowledge and openness have kept them busy with students seeking them out. Obviously, the final selection of just sixteen presentations was not an easy task.

By June of 1979, the list was completed and planning for the conference intensified. Stephanie M. Damadio of the Department of Anthropology served as the symposium coordinator, ably taking charge of such important tasks as hotel and room arrangements, preparation of programs, transportation arrangements, and audiovisual needs. She even found baby sitters for participants' children. Department illustrator, George Robert Lewis, prepared artwork for the conference. Secretaries Michele H. Albert and Elizabeth C. Beard assisted with the voluminous paperwork.

Somehow it all came off smoothly. Most participants arrived Wednesday evening, 23 April, for a cocktail reception in Rosslyn, Virginia. Formal proceedings began at 9:00 A.M. the following day with welcomes by Richard S. Fiske, director of the National Museum of Natural History, and by Douglas H. Ubelaker, chairman of the Department of Anthropology. Herman J. Viola chaired the sessions for that day. That evening the participants, the honorees, and their guests gathered in the Natural History Building for a formal banquet, featuring T. Dale Stewart as the after dinner speaker (his presentation has also been published in this volume). The remainder of the papers were presented the following day in sessions chaired by Richard G. Forbis.

The following represents the official program. Note, however, that Beatrice Medicine was unable to attend and her presentation was not given. George C. Frison also could not attend, but his manuscript was read by Forbis.

Thursday, 24 April 1980

9:00 a.m.	WELCOME: D. Ubelaker, Chairman, Department of Anthropology, Smithsonian Institution R. Fiske, Director, National Museum of Natural History, Smithsonian Institution CHAIR: H. Viola, Smithsonian Institution
9:20 a.m.	"John Canfield Ewers, and the Great Tradition of Artists, Ethnologists, Historians, and Museologists of the Northern Plains." W. Fenton, State University of New York
9:50 a.m.	"History and Identification of Blood Bands." H. Dempsey, Glenbow Alberta Institute
10:40 a.m.	"Out of the Mirage: Current Research and Interpretations of Women in Northern Plains Societies." B. Medicine, University of Wisconsin
11:20 a.m.	"An Historical Character Mythologized: The Scalped Man In Arikara and Pawnee Folklore." D. Parks, Mary College
12:00 p.m.	LUNCH
1:30 p.m.	"The Crow Migration Story." J. Medicine Crow, Tribal Historian, Crow Indian Tribe
2:10 p.m.	"The Wichita Indians, 1541–1750s." M. Mott Wedel, Smithsonian Institution
3:00 p.m.	"Laced Coats and Leather Jackets: The Interracial Exchange of Clothing on the Plains." J. Hanson, Smithsonian Institution
3:40 p.m.	"Political Assimilation of the Blackfoot Indian Reservation, 1887–1934: A Study in Survival." T. Wessel, Montana State University

Friday, 25 April 1980

	CHAIR: R. Forbis, University of Calgary
9:00 a.m.	"Waldo Wedel, Archeologist: Perspectives that Grew in the Plains." J. Gunnerson, University of Nebraska Museum
9:45 a.m.	"Apachean Migration and Adaptation." D. Gunnerson, University of Nebraska Museum
10:35 a.m.	"Some Comments on Zooarcheological Method." B. Hesse, University of Alabama at Birmingham
11:15 a.m.	"Political Reorganization among Three Arapahoe Divisions: A Comparative Analysis of Adaptive Processes during the Reservation Era." L. Fowler, State University of New York

12:00 p.m. LUNCH
1:30 p.m. "Some Observations on the Central Plains Tradition in Iowa." J. Hotopp, Iowa City
2:10 p.m. "Paleo-Indian Winter Subsistence Strategies on the High Plains." G. Frison, University of Wyoming
3:00 p.m. "Shelling Corn in the Prairie-Plains: Archeological Analogies and Ethnographic Parallels Beyond the Pun." D. Gradwohl, Iowa State University
3:40 p.m. "Evidence for Early Human Occupation in the New World: A Critical Review." D. Stanford, Smithsonian Institution

Following the conference, those participants who had not yet submitted manuscripts were strongly urged to do so. The editors examined each essay upon receipt and recommended changes when necessary. Accepted manuscripts were then sent to specialists for outside review. Any changes recommended by the peer review and approved by the editors were communicated to the authors. After the authors approved these changes, the essays were judged ready for publication and were organized into the volume.

Of the seventeen originally planned papers, fourteen survived the above editorial process and are presented here. Each focuses on some aspect of Plains Indian anthropology, but the approaches, topics, and problem-levels vary considerably. Collectively, the essays are not designed to follow a particular theme or to cover any assigned area within the Plains. Under the general guidelines presented earlier, the authors were asked to provide new original data in a manner that would admirably complement the career interests and accomplishments of the two great scholars honored by this volume.

The leadoff articles by William N. Fenton and James H. Gunnerson focus on the lives and professional careers of Ewers and Wedel. Fenton brings to the volume a fifty-year professional acquaintance with both honorees, which began at Dartmouth College in 1930 with Ewers and at Signal Butte, Nebraska, in 1932 with Wedel. The three scholars were later colleagues at the Smithsonian when Fenton was associated with the former Bureau of American Ethnology, while Ewers and Wedel were curators in the Department of Anthropology. Fenton's essay is alive with personal reminiscences, chronological ordering, and interpretive insights. Ewers' lifetime study of Blackfoot culture and Plains art and material culture is traced back to classroom assignments by Clark Wissler at the Yale University graduate school. Additional influence was provided by Leslie Spier, Peter Buck, and Edward Sapir. Fenton then follows Ewers through positions as field curator for the National Park Service, Naval Reserve officer, curator of ethnology for the Smithsonian, and then planning officer, assistant director, and director of the Museum of History and Technology (now called National Museum of American History). Fenton also details Ewers' many contributions to knowledge through publication and exhibition.

Gunnerson brings to his essay on Wedel a professional acquaintance of over thirty years and a firm awareness of his contributions to Plains anthropology. Gunnerson draws heavily from Wedel's own autobiographical sketch, "The Education of a Plains Archeologist," published in 1977 in the *Plains Anthropologist*, as well as from personal impressions of his professional development and impact. The essay reveals Wedel's pioneer role in the evolution of Plains archeology and his methodological influence outside of that region. Gunnerson emphasizes Wedel's insistence on hard data to document theory and his broad ecological approach, integrating ethnohistorical information as the keystones to his impact and success. Gunnerson traces Wedel's productive career through undergraduate training at Bethel College in Kansas and at the University of Arizona graduate school at Nebraska under William Duncan Strong and at the University of California, Berkeley, under Alfred C. Kroeber and Carl Sauer, culminating with a career position at the Smithsonian Institution. Gunnerson summarizes Wedel's many scholarly and administrative achievements at the Smithsonian, noting specially his "profound influence" upon younger archeologists who have followed or further developed their mentor's ideas and research approaches.

The Fenton and Gunnerson biographical

sketches are followed by bibliographies (not including book reviews) of Ewers and Wedel and a thoughtful essay by physical anthropologist, curator emeritus, and former director of the National Museum of Natural History, T. Dale Stewart. The Stewart essay represents the after dinner address he delivered to the symposium participants on 24 April 1980. The editors include it with the belief that it offers insight into the climate of Smithsonian science at the time Ewers and Wedel began their careers here.

The remaining essays in the volume focus on subject matter that relates directly to the interests of Ewers and Wedel and are written by individuals whom they have influenced. A general reverse temporal ordering is followed, which runs from the present (or ethnographic present) to the past, culminating in two essays on Paleo-Indian research.

Drawing heavily from data collected recently from Indian informants, Douglas R. Parks looks critically at the "scalped man" character in Arikara and Pawnee folklore. His essay traces the evolution of the scalped man from an historical character to a mythological one, demonstrating how the role definition reflects social attitudes and larger cultural phenomena. His sample is drawn from thirty stories. Some are published in studies by George A. Dorsey, Gene Weltfish, and Parks, himself, while others are taken directly from the author's unpublished files and synthesized here for the first time. The result is a very readable and informative account of this aspect of Plains Indian folklore. Parks received a Smithsonian postdoctoral fellowship in 1973 and has since worked closely with both Ewers and Wedel on problems of mutual interest.

The following three essays focus on different aspects of the history of some Northern Plains tribes, an area long of interest to Ewers. Thomas R. Wessel discusses the problems of adaptation the Blackfeet Indians faced during their transition from warrior-hunters to sedentary White-controlled lifeways. His essay focuses on reservation life between 1887 and 1934, and specifically on the role of one man, Robert J. Hamilton, whose life spanned the transitional period. Wessel follows Hamilton's life from his teens during the last buffalo hunts in the 1880s through the development of a modern reservation economy in the early 1900s. Wessel also received a Smithsonian postdoctoral fellowship in 1973 to conduct research on Indian agriculture with Ewers.

Loretta Fowler looks at political developments among the Northern Arapahoe and Gros Ventres Indians prior to 1934. She demonstrates how two closely related tribes developed considerably different political behavior when confronted with the transition from old lifeways to reservation life. She places the development of the Business Council in historical context with an exhaustive review of traditional methods of age grading, consensus formation, and definition of authority. The essay provides important historical information on political development, but more importantly it interprets the historical data within a broad sociocultural perspective. Loretta Fowler held a Smithsonian postdoctoral fellowship in 1976 while working on the history of Arapahoe political organization with Ewers and Wedel.

In a summary essay on the Blood bands, Hugh A. Dempsey addresses the nature of band organization among nonhorticultural Plains Indians. He provides a functional definition of the band that emphasizes flexibility and variability rather than consistency and predictability. The variation in behavior and cultural fluidity described here are impressive and may provide a useful lesson to those students of Plains Indian culture who depend upon hard models to interpret their data. Hugh Dempsey traces his acquaintance with Ewers back thirty years to the Blackfoot Reservation in Montana where both men were conducting field research.

James A. Hanson's essay focuses on the evolution of garments worn on the Plains during the years of increasing Indian-White contact. He provides interesting perspective to some long-held beliefs regarding traditional Plains clothing among Indians as well as among the European immigrants. From earliest contact, fashions were flowing in both directions. European clothing

comprised some of the earliest items traded to Indians, while demand for Indian garments among Whites was also strong. Hanson brings together data from a variety of sources, including his own observations of museum collections and early photographs to form a very readable account of this important aspect of Plains material culture. Hanson's contact with the Smithsonian dates back to when he and his father (Charles Hanson, founder and head of the Museum of Fur Trade at Chadron, Nebraska) attended a meeting in Washington, D.C., of the Potomac Corral of the Westerners. There he met Ewers and Wedel and began a lifetime of professional contact with both of them. He later joined the staff as the Native American Museum Training Coordinator in the Office of Museum Programs.

Mildred Mott Wedel presents an important contribution to the historical ethnology of the Wichita-speaking peoples in the southern Central Plains. She analyzes the material culture, lifeways, and intertribal relationships as reported in Spanish sources beginning in the sixteenth century and in French sources beginning in the eighteenth century. The result is a vivid illustration in painstaking detail of the manner in which European politics and commercial machinations affected the welfare of the native peoples and altered their lifeways.

Mildred Wedel has conducted research in Plains ethnohistory and worked closely with her husband Waldo on problems of mutual interest in the Plains both before and after their marriage in 1939. She has also enjoyed the intellectual stimulation and fellowship provided by John and Margaret Ewers over the years in the Department of Anthropology, where she has held the title of Research Associate since 1974.

The contribution by David Mayer Gradwohl integrates data from ethnography, archeology, ethnohistory, and contemporary observations to analyze a specific culture trait, the use of mussel shells in the removal of corn kernels for drying. Gradwohl documents that contemporary Mesquakie Indians of central Iowa remove green corn kernels from the cob by using sharpened clam shells taken from the Iowa River. Interestingly, shell artifacts have been found archeologically in Iowa and throughout the Plains, which show evidence that they were used for processing corn. His essay argues that despite the many other cultural changes that obviously have occurred, at least this trait has continued for nearly one thousand years.

The research design presented in this essay by Gradwohl is very similar to Wedel's own approach of using ethnohistorical and other modern data to explain residues of past behavior revealed through archeology. Wedel and Gradwohl presently are collaborating on research dealing with the 1917 field surveys by Warren K. Moorehead, Fred H. Sterns, and Joseph B. Thoburn in the Arkansas drainage. They have been friends since Gradwohl's student days at the University of Nebraska.

Brian Hesse's essay addresses the realities of faunal analysis, giving special attention to the problems of sampling and identifying the number of individuals represented in a bone assemblage. The essay clearly shows the benefits to be gained from careful analysis above the usual listing of species. The essay addresses broad theoretical problems in faunal analysis using examples from the Central Plains tradition, the Middle Missouri region, and elsewhere in the Plains.

Hesse received a predoctoral fellowship with the Smithsonian Institution in 1975 and later worked for the Office of Exhibits in the preparation of a permanent exhibit hall entitled "Western Civilization: Origins and Traditions." Most of his previous work was carried on in South America and the Near East. This essay, focusing on the Plains, demonstrates the extent to which investigators in the Plains share technical problems with workers in other regions of the world and the corresponding need for the interchange of ideas.

"Some Observations on the Central Plains Tradition in Iowa" by John A. Hotopp presents new data to further define that tradition, with a special look at settlement patterns. The essay critically surveys the history of research pertaining to

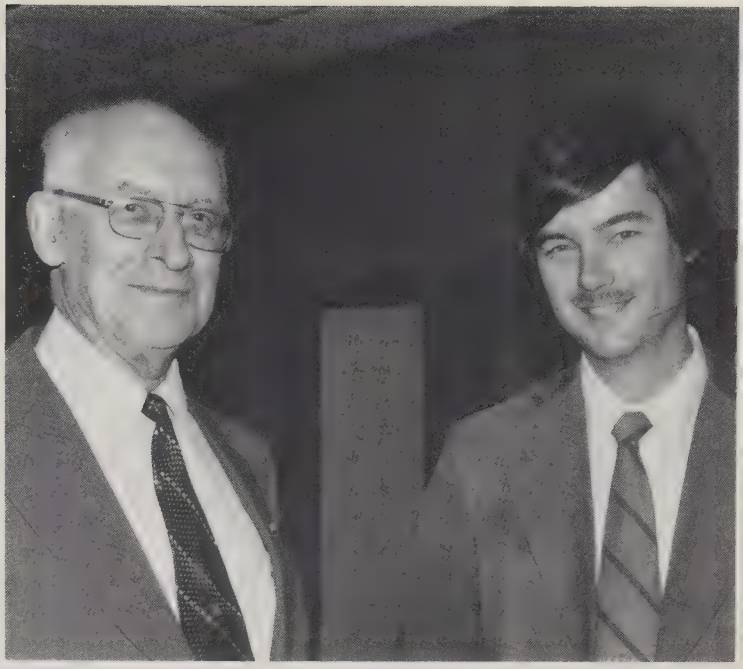
the Central Plains tradition, much of it authored by Wedel, and presents an important new synthesis for the Glenwood locality. Hotopp looks at the size, floor area, and environmental position of Glenwood lodges through time to discern settlement patterns. The ecological approach shown here, integrating some ethnohistorical data, not only utilizes Wedel's published data but approximates Wedel's own approach to similar problems. Hotopp worked with Wedel at the Smithsonian on a postdoctoral fellowship in 1980 and 1981.

George C. Frison examines evidence from the High Plains regarding "Paleo-Indian Winter Subsistence Strategies." The author reviews data from several Paleo-Indian sites in Colorado, South Dakota, and Wyoming to elucidate Paleo-Indian methods of winter food procurement that include the freezing and drying of meat as well as the manufacture of pemmican. Frison conducted research at the Smithsonian Institution in 1980 as a Smithsonian's Regents' Fellow.

The final essay in the volume, by Dennis Stanford, is titled "A Critical Review of Archeological Evidence Relating to the Antiquity of Human Occupation of the New World." Stanford examines the evidence relevant to the problem of man's antiquity in the New World. He begins with a survey of largely theoretical contrasting positions on this important issue and then moves to a detailed discussion of the archeological evidence. His critical review of the archeological evidence focuses mostly on the reliability of the radiometric dates, the interpretation of the stratigraphic context, and the determination of whether or not recovered specimens are of human manufacture. Stanford joined the Smithsonian staff in 1972. His career research has focused on the excavation and analysis of Paleo-Indian archeological sites, particularly in the Plains area.

The editors began this effort with certain misgivings. John C. Ewers and Waldo R. Wedel deserved suitable recognition for their work, which forms a significant chapter in the history of Smithsonian anthropology, upholding a tradition of excellence begun by E.G. Squier and E.H. Davis under the direction of Joseph Henry and continued by Major John Wesley Powell, William Henry Holmes, James C. Mooney, and others. Certainly, Ewers and Wedel have had much to do with keeping that tradition strong and vibrant; and, since they have contributed so much to the literature of anthropology, it was only fitting that these papers given in their honor should also be published. The editors hope that this volume will be judged an appropriate tribute to these two scholars, whose leadership, dedication, and personal standards of excellence have been such an inspiration to their students, colleagues, and friends.

John C. Ewers and William N. Fenton



Waldo R. Wedel and Douglas H. Ubelaker

Participants in the Ewers-Wedel Symposium

Loretta K. Fowler

David M. Gradwohl

Douglas R. Parks

Richard S. Fiske

Left to right: Brian C. Hesse, Waldo R. Wedel, R.H. Ives Goddard III, Mildred Mott Wedel, John C. Ewers, Irene Zimmerman

The audience at one of the sessions

Left to right: (*top*) Margaret Ewers, Diane Ewers Peterson, Regina Flannery; (*bottom left*) John A. Hotopp and James B. Griffin; (*above*) Thomas R. Wessel and Stephanie H. Damadio

Left to right: James H. Gunnerson, Thomas R. Wessel, Herman J. Viola, Hugh A. Dempsey

Herman J. Viola and Joseph Medicine Crow

Mildred Mott Wedel

James A. Hanson and Dennis J. Stanford

Martha R. Blaine and Robert M. Kvasnicka

Left to right: Richard G. Forbis, William N. Fenton, Waldo R. Wedel

John Canfield Ewers and the Great Tradition of Artists and Ethnologists of the West

William N. Fenton

ABSTRACT

John C. Ewers is one of the nation's foremost scholars. Throughout his career he has been able to apply his personal talent and interest in art to the study of the American Indian, giving him a unique appreciation for native art forms and enabling him to transmit that insight to the American people through his numerous publications.

ACKNOWLEDGMENTS.—I am indebted to Nancy Elliott, director of the Dartmouth College Alumni Records Office, for copies of the file on John Canfield Ewers, Class of 1931; and to Ned Pitkin of Loudonville, New York, a classmate of Ewers, for a copy of the *Class of '31 31-Yr. Yearbook*. Their assistance is gratefully acknowledged. The official ARO file also contains a copy of Professor Robert E. Riegel's review of *The Indians of Texas in 1830* from the *Dartmouth Alumni Magazine* of June 1969.

My contribution to this symposium honoring Jack Ewers and Waldo Wedel might honestly be titled "A Personal View during Fifty Years," for I have known them both since the early nineteen-thirties, a period that encompasses our professional careers as anthropologists. I met Jack at Dartmouth and Waldo at Signal Butte, my one foray into archeology and my introduction to the Plains. Afterward, we three were colleagues at the Smithsonian. I am happy to acknowledge these two fine gentlemen and eminent scholars among my friends today. We share in common an interest in the interface of history and anthropology, an approach that has come to be known as ethnohistory, and our contributions are as varied as the problems we have researched. Wedel's use of the direct historic approach in the prehistory of the Plains and his contributions to archeological and natural science will be treated by other participants in this symposium. Ewers has linked his own talent and training as an artist to historical interpretation of objects and paintings of the Old West and to field work among the horsemen of the Northern Plains, producing both books and monographs and creating entire museums that bring his visual acuity to the public. Having identified the two scholars with the tradition of historical anthropology at the Smithsonian, and saluting Wedel, I now confine my remarks to the career of Jack Ewers.

Jack and I met in a senior seminar in sociology taught by Andy Truxall, who was afterward president of Hood College in Frederick, Maryland, for that was the nearest an undergraduate could come to the science of culture in the Dartmouth of our day. Jack was a class behind me, but we graduated together, since I had dropped out the previous year after discovering that I abhorred businesss administration and finance. With the age-graded structure of Dartmouth undergraduate life, we had not previously been thrown together in classes and other activities. I had known Jack in passing as an editor of the *Jack-O-Lantern*,

William N. Fenton, State University of New York at Albany, 1400 Washington Avenue, Albany, New York 12222.

a student magazine of humor that was sometimes in trouble with the college administration for borderline jokes and drawings that would raise few eyebrows or turn few heads today. Indeed, much of the humor was quite funny. I do not hold Jack responsible for all of it, but I must say that his sense of humor has never left him.

We both went on to Yale to do anthropology because of Clark Wissler. Wissler came up to New Haven on Tuesdays and Thursdays to teach at the Institute of Human Relations from his full-time post as chairman of anthropology at the American Museum of Natural History, where each of us had come to know him separately. Wissler attracted an extraordinary number of young students to careers in anthropology. He afterward referred to them as his "boys." Each of us had gone to him with some research interest that perhaps started with a hobby; he always found time for us and he was always encouraging. Today I retain an image of this patient, generous, and genial man turning from his desk to greet me, and then returning to his writing without ever having lost his stride. Small wonder that some of us sought him out at Yale.

The Anthropology Department was in its birth pangs when I arrived at New Haven in the fall of 1931. Wissler was already ensconced at the Institute; Edward Sapir had just arrived from the University of Chicago as Sterling Professor of Anthropology and Linguistics in the graduate school; George Peter Murdock, an Old Blue, was assistant professor of sociology and heir to the tradition of William Graham Sumner and Albert "Buggs" Keller; and Cornelius Osgood, a fresh Ph.D. from Chicago, was the new curator of anthropology and prehistory at the Yale Peabody Museum, George Grant MacCurdy having just retired. This four-sided arrangement of anthropological talent was soon to create some interesting polarities, and some tensions for students, but the distances kept us all in shape walking.

Jack arrived the second year, having spent the year after graduation studying painting and drawing at the Art Students' League in New York City. This was excellent preparation for his later work in material culture, museology, and the history of nineteenth-century painters of the West. Many of these painters, from George Catlin to Frederick Remington, were ethnologists more or less. A number of them were also writers of some note, and Jack is clearly in their intellectual descent.

I recall that Wissler's seminar one year included W.W. Hill, Willard Z. Park, David Mandelbaum, David Rodnick, Froelich G. Rainey, Jack, and me. Wissler had long since outgrown the "age and area hypothesis," with which most anthropologists would tag him today, and he was into direct history and culture change. He was also writing a landmark paper in the history of anthropology, "The American Indian and the American Philosophical Society" (1942), which he shared with us. He assigned each of us a people on or bordering the Northern Plains and suggested that we read and master the historical and ethnological literature on the group and be prepared to trace their movements and major contacts with other ethnic entities, including Whites. Wissler assigned the Ottawa to me first and later the Arikara, when it became apparent that he was going to place me as a Laboratory of Anthropology fellow with William Duncan Strong's field party from the Smithsonian (that is how I met Wedel). It was a similar assignment that led Jack to the Blackfeet and their neighbors with whom his name is now synonymous.

Either that year or the next, and certainly under Wissler's influence and direction, Ewers undertook for his master's degree thesis a study of Plains Indian painting on skin robes, parfleches, and tipis that resulted in his first book (1939), which was selected as one of the fifty best of the year by the American Institute of Graphic Arts. This fate has befallen few doctoral dissertations to my knowledge.

In those years, at least two other members of the Yale Anthropology faculty were interested in material culture and influenced students to undertake research on related problems. Leslie Spier came on as visiting professor in the autumn of 1932 to offer "Methods of Ethnography," with

heavy doses of material culture. The other inspiration was Te Rangi Hiroa (Peter H. Buck), the Maori scholar who, as Bishop Museum visiting professor, was to acquaint us with the intricacies of lashing adzes and pounding tapa cloth. Not only did Te Rangi Hiroa make the Polynesian cultures come alive in class, but the Bucks also gave great student parties in which we all learned to perform the *Haka*. Buck was the first to demonstrate for us the uses of a 35-mm camera in studies of museum collections. In fact, he was about to visit London that summer to seek out the materials that Captain Cook brought back from his voyages and that now repose in several museum collections. Jack, having already begun research on museum collections, was to master the Plains collections of the world, which are extensive and demand unique talents of the investigator.

Leslie Spier in his "Methods of Ethnography" course insisted that if one of us would take up the pursuit of material culture and technology as a career interest, he would make a name for himself. At least one person heard and remembered, but the great concentrations of student interest at Yale in our day were in Sapir's seminars in linguistic science, which required special aptitudes and background that most of us lacked. Others of us were gaited for his offerings in "Primitive Society" and "Primitive Religion and Art," where students who were headed for fieldwork in ethnography had a chance to present a whole culture. Many of the persons who later made names for themselves came out of these sessions, including Ewers, Hill, Hudson, La Barre, Rainey, Mandelbaum, and Kennedy.

Sapir's even more fashionable seminar on the "Impact of Culture on Personality," to which foreign fellows and local psychiatrists flocked, displacing us ethnographers to the outer row of chairs, touched aspects of the relation of the individual to his culture that lay beyond the interest of still other students. Jack wisely concentrated his efforts where he had special talent: the field of primitive art. Working with Wissler, he completed the research for his master's thesis and departed without going on to the doctorate. None of us who stayed on in New Haven to complete the doctorate has contributed more to the literature of American ethnology.

The following year Jack was in New York, taking courses at Columbia, studying collections of painted robes at the Museum of the American Indian and at the American Museum of Natural History, consulting with Wissler, dropping in at the Art Students' League, and getting married. The pleasant affliction of falling in love had overtaken him two years previously, when in the summer of 1932 he made the grand tour of Europe. Few persons today experience the pleasures and amenities of a trans-Atlantic crossing as it was in the hey-day of the great Cunard liners. For Jack it was especially pleasant because he met Margaret Elizabeth Dumville, then a student at Columbia; they married two years later. Forty-six years is something of a record for an anthropological marriage, and those of us who know them cannot imagine Jack without Marge, or vice-versa. Their two daughters, Jane (1938), class of '61 at Mary Washington College, and Diane (1944), are both married and have children of their own. One pair of grandchildren lives in nearby Arlington; the other on a ranch in Montana.

While some of us were off chasing Indians for John Collier, conducting (and losing) elections on the Indian Reorganization Act and serving as members of the applied anthropology unit of the Indian Field Service, which brought unwelcome information to the attention of the commissioner, Jack was laying a solid foundation in museology as field curator in the National Park Service. He worked for five years at such sites as Morristown, New Jersey; Berkeley, California; and Macon, Georgia. When I arrived in Washington in February 1939 to join the Bureau of American Ethnology, I stayed a few nights with Ralph and Dorothy Lewis. Ralph was also with the Museum Division of the National Park Service, which had a workshop or studio in the old Ford Theatre. Jack was at work there, at least temporarily. This was at a time when the Smithsonian's National

Museum was doing virtually nothing about modernizing its exhibits; the exciting developments in interpretation and display were going on in the National Park Service, which had jurisdiction over historic sites ranging from prehistory to the present. Ralph Lewis and Jack Ewers were in the thick of this movement.

In 1940 the Bureau of Indian Affairs decided to build a museum of the Plains Indian in Browning, Montana. No one in the country was better prepared to plan, design, and execute such a museum than Jack, who was summoned to the task by Dr. Willard Beatty, its broad-gage director of education, and Rene d'Harnancourt, then manager of the Indian Arts and Crafts Board (and afterward director of the Museum of Modern Art).

For four years, from 1941 to 1944, Jack and Marge lived among the beloved old people of the Blackfeet at Browning. Here their daughters spent their early childhood. The museum gradually took shape. It was nearly completed in 1944 when Jack went off to serve as a Naval officer for two years in the Pacific. Marge ran the museum in his absence. In Browning in September of 1950, when I was looking at factionalism in three trouble groups selected by the then Secretary of Interior, I briefly came to know some ranchers, young politicians who felt obligated to share with their kinsmen in the old pattern of generosity expected of leaders (which the Indian Service looked upon as graft). I interviewed and recorded some old people, and recall names like John Running Crane and Julia Wades-In-Water (who made ingenious use of an autograph book for soliciting gifts of unsuspecting summer tourists during the winds of winter). I also met a postmaster with the Virginia name of Taliafero. All of them fondly remembered the Ewers family. I also observed the drunks on main street and could appreciate how Browning was no place to bring up two daughters.

One day in 1945 I had a phone call from Frank Setzler, the genial head curator of anthropology at the U.S. National Museum who gave wonderful parties, which we all remember. Although he and I disagreed on the direction that anthropology should take at the Smithsonian Institution, we did agree on one thing—that Jack Ewers would make a wonderful associate curator of ethnology at the National Museum.

Jack's two predecessors in the post, though gifted anthropologists, had interests that drew them away from the collections. W.W. "Nib" Hill was a Navajo specialist with strong interests in material culture; he later published with Clyde Kluckhohn. But Hill very much wanted to teach and went off to Albuquerque to build a department of anthropology. Joe Weckler was a social anthropologist out of Chicago, whose field was Oceania. He wrote a brilliant war background study on Polynesia for the Ethnogeographic Board, and he was soon commissioned as an officer in Naval Intelligence. Their superior and Jack's new boss at the Museum, Herbert Krieger, had long since been passed by in the stream of anthropology represented by his younger associates from the universities, and he withdrew from most collegial activities. He had once played the violin, however, and I dropped by one noon hour to find a collection of instruments spread out on table tops. I picked up one instrument and commenced to tune it, when I sensed by the changed look on Krieger's face that there was someone standing at the door. I turned to be greeted by the then director of the U.S. National Museum, who chided me that the instruments were not to be played lest other scientists be disturbed, and he reminded me that I had been hired as an anthropologist at the Bureau of Ethnology. I was not expected to mess with collections. I relate this incident because it says something about the atmosphere into which Jack moved and the social distance from the Bureau.

Jack's capacity for sustained hard work both at writing and exhibit-planning defies imagination; but the evidence is there in the steady stream of publications and in the museums and exhibits that he has created. Whenever I have dropped in on him at the Smithsonian I found him pounding the typewriter with four fingers, filling drawers with cards containing notes on specimens, pas-

sages from books and articles, and bibliography. Somehow these all get translated into felicitous prose. Even his letters are long and thoughtful, in the nineteenth-century mode before there were telephones and other devices that fracture thought. I am told that he has worn out several typewriters. It is also suspected that he has worked after hours and on weekends at home.

That kind of industry and virtue is still rewarded. When the Smithsonian finally got moving on its exhibits renovation program, Jack, after a decade as curator, became its planning officer. Within three years, he became assistant director and then director of the Museum of History and Technology, when that new museum building was contemplated. Once the Museum of History and Technology was built and established, Jack was rewarded with the self-directed research post as senior scientist, which he held until retirement. Much of this progress was accomplished during the regime of Secretary Leonard Carmichael and under Frank Taylor, who saw to it that Jack, in 1965, was the recipient of the first Exceptional Service Award of the Smithsonian Institution. Three years later, Dr. Carmichael nominated him for an honorary Doctor of Science at our alma mater, Dartmouth College.

Having built and installed museums in Montana and the District of Columbia, Jack was in demand from other institutions as a consultant and advisor. His contributions to the history of the West, the ethnology of the Northern Plains, and the field of museology have brought Jack national recognition. The University of Montana honored him with an LL.D. in 1966; a decade later, he received the Oscar O. Winther Memorial Award of the Western History Association. Indeed, the foremost historian of the frontier, Ray Allen Billington of the Henry E. Huntington Library, has frequently commented on Jack's contributions to Western history and applauded his participation in the "Westerners," a society of laymen, in which historians and western history buffs mingle in good fellowship, high spirits, and hardy food.

Such outreach in public service is not always as rewarding. Serving on boards of learned societies and museums, though a valuable professional contribution, takes a writer away from his desk. The public service can also be traumatic. Jack served as trustee, and then as chairman of the board of the Museum of the American Indian (Heye Foundation) during a difficult period in its recent history. A trustee of a charitable trust is liable for the assets of the trust and the conduct of its employees. A judgment against the trust must be satisifed by the trustees. Jack worried through a stipulation of the Supreme Court of New York against the museum that specified the dismissal of its then director, the ouster of certain named trustees, the return of certain collections, demanded an inventory of the remaining collections, and then impaneled a new board of trustees. Those of us who have served on the new board are aware that the Museum of the American Indian is happily out of the woods, its collections have been completely inventoried and computerized, a policy on collections has been established and published, there is a vigorous new director, professional staff has been hired, some missing items have been recovered, two smashing exhibits were staged at the Old Customs House on Bowling Green, and, for the first time, the Museum is no longer dipping into endowment for operations. A great deal of this progress is due to Jack's patience and perseverance. Thus, it is fitting that the museum where he commenced his research as a graduate student should honor him on retirement from its board as Trustee Emeritus.

As retirement approached, Jack cut his lines to marginal activities to concentrate on writing projects. Most scholars have this continuing need to write up material collected in earlier years of field work, museum, and library research, which we publish for our own satisfaction, and perhaps for the edification of a wider audience. By publishing our understandings of certain selected subjects in the light of problems that sent us to investigate them, we perhaps can point out some leads to future scholars. As Kroeber indicated (1959), when discussing anthropology as a humanity, the great contributions are made by those persons

who stick to a topic and area for a long period of time and develop insights that are unique. The publishing career of John C. Ewers fits this model nicely.

Even a personal view of his career calls for some comment on Ewers' works. I am an incurable addict of reprint collecting. It is a disease I caught in the dusty old Bureau of American Ethnology library before the Smithsonian Institution building metamorphosed into Renwick Hall, when the then librarian, who hated Boas and his ilk with a passion and thought reprints a design of the Devil to annoy her profession, cast the reprint collection on the floor of the stacks for Bureau scientists to retrieve before they went into the trash. I have been collecting and cataloging them ever since. It was a simple matter to retrieve 14 cards from the catalog and as many separate reprints bearing the name of J.C. Ewers. They fall into three categories: ethnology of the Blackfeet and their neighbors on the Northern Plains (7); portraiture and painting of Indians (5); and museum exhibits (2). I should like to mention five books—two in the first category, and three in the second—that are standard works on the subjects treated. Two are classics. The entire Ewers *genre* reveals sustained interest in the visual arts, technology (or material culture), history, ethnography, ethnohistory, and the interpretation of collections through museum planning and exhibits.

Of his books, *The Horse in Blackfoot Indian Culture* (1955), fulfills Leslie Spier's dictum that a work on material culture should enable the reader to reproduce the technology described. I am confident, though I have never attempted it, that from the descriptions and illustrations one could set up and pack a travois, load a pack horse, move camp, and set up the lodges. But what makes the work a classic, meriting its inclusion as the third in the new series of *Smithsonian Classics in Anthropology* in the company of works by James Mooney and John R. Swanton, is that it describes a whole round of related activities that gave Blackfoot life its distinctive quality. This accolade is both a tribute to Jack and to the tradition of the Bureau of American Ethnology. The Bureau met its demise in the interests of administrative management, but its *Bulletin* series stands as an enduring monument.

It is evident that Jack did a great deal of his writing after hours, at home, on evenings and weekends. That kind of dedication requires energy, intensity, and persistence. His university press books were produced in this manner. The writing is not in the least pedestrian; it is never obscure or overburdened with the theory of the moment. Indeed, Jack never learned to write like a social scientist. Somewhere he had a good English teacher, for his works contain some fine passages.

The foreword to his book, *The Blackfeet: Raiders on the Northwestern Plains* (1958), pays tribute to Clark Wissler, who certainly was proud of him. Wissler has long since gone to the sand hills like Jack's old informants. In 1969, the Smithsonian Institution Press published a handsome edition of Jean Louis Berlandier's *The Indians of Texas in 1830*, which Jack edited and to which he contributed an introduction. The *Dartmouth Alumni Magazine* of June 1969 carried a glowing review of this book by Professor Robert Riegel, himself a distinguished historian of the West. Riegel, who is remembered by Dartmouth alumni for his course "Cowboys and Indians" and for being first violinist of the Handel Society of Hanover, wrote: "Even the most casual glance at the scholarly characteristics of the book will bring recognition of Ewers' immense erudition, his great diligence, and his scholarly standards."

Two years previously, Yale University Press issued a centennial edition of George Catlin's *O-Kee-Pa: A Religious Ceremony . . . of the Mandans*, which had a somewhat checkered history before the London edition of 1867. Jack explains all of this in the introduction. Catlin's controversial work was issued with a *Folium Reservatum*, so necessary to the protection of morals in Victorian England, because Catlin describes the artificial phallus and related accoutrements of the O-kehée-de dancer and his participation and movements in the Buffalo fertility rite, the threatening of women and children who are saved from as-

sault by the medicine pipe, their driving him onto the prairie, his emasculation, and the return of the women in triumph. In the intervening century the times and the morals have changed. We can be grateful to Catlin, who depicted and described activities no longer available for study and gave rise to a tradition in the graphic arts and writing to which Ewers is the heir and master.

In *Artists of the Old West* (1973), which he dedicates to his daughter Diane, who shares her father's talents and interests in the Old West, Jack has assembled his previous monographic studies of individual artists who were at once explorers and historians, from Charles Wilson Peale to Charles M. Russell. The portraits of Charles Bird King and John Neagle are especially important just now, when certain extant collections may be scattered into private hands. Peter Rindisbacher's dancers and domestic scenes have an especial appeal. And Karl Bodmer's "Hidatsa Dog Dancer" recalls the frontispiece of Wissler's *American Indian* (1922). As a student of the Iroquois I am particularly grateful for the pencil sketches of Pierre, an Iroquois farmer, and Aeneas, the Iroquois guide to Father DeSmet, by Gustavus Sohon for what they convey about the Iroquois voyageurs in the West and because they link Jack to my own area of research.

On this note let me end this tribute to an old friend and an esteemed scholar who has illuminated a whole area of discovery for our enlightenment.

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Waldo R. Wedel, Archeologist: Perspectives that Grew in the Plains

James H. Gunnerson

ABSTRACT

Dr. Waldo R. Wedel has devoted his career to research and writing on Plains archeology and ethnohistory, his comprehension of which is unmatched. Furthermore, his establishing cultural chronologies, his relating cultures to their environment and his identifying archeological complexes with known tribes are all outstanding contributions to anthropological methodology.

I am honored to have been asked to present an evaluation of Dr. Waldo R. Wedel's contributions to the field of anthropology, but I am also humbled by the realization that no evaluation could be adequate. Even though officially retired, he is perhaps more active than ever before in his research, with each additional publication becoming more significant as he pursues a career characterized by steady intellectual achievement. Thus, this paper can be considered no more than an interim evaluation of a highly productive career.

The temptation was great simply to reiterate Wedel's autobiographical paper, "The Education of a Plains Archeologist," which he presented at the 34th Plains Anthropological Conference in 1976 (Wedel, 1977a). I have drawn heavily on this exceedingly thoughtful publication. I strongly recommend that you read it all.

It was also a great temptation to collect and present reminiscences and anecdotes concerning Wedel from his many friends, as for instance, Emil Haury, with whom Wedel grew up in Newton, Kansas, and whom he followed to the University of Arizona; Philip Drucker, a fellow graduate student at the University of California; and former members of his crews, many of whom have become professionals in anthropology. Some people who could have contributed most to such a project, such as William Duncan Strong and A.T. Hill, have been gone for a number of years, while others like George Metcalf, who for many years assisted Wedel in the field and laboratory (Wedel, 1978a), have died more recently. It is of interest to realize that Wedel is the only person still professionally active who attended the first Plains conference. Although a collection of reminiscences is beyond the scope of this paper, it should be collected and published as part of the lore of Plains archeology.

Instead, as a friend and professional colleague, I will bring to your attention Wedel's contributions to Plains archeology. Wedel and his early associates set the tone and direction of Plains archeology. They were few in number, diverse in personality and background, but they all were highly motivated. When Wedel set out on a career in Plains archeology, there was no mold into which he was to fit; indeed, he had much to do with creating a mold for future workers.

The field of professionally trained archeologists was small. In fact, Wedel in 1936 was the first anthropologist to receive a doctorate at the University of California with a dissertation that fo-

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cused on archeology. The number of jobs was even smaller and funds for research nearly nonexistent. Perhaps even more important, with regard to the Plains, was the fact that current anthropological wisdom suggested there was no significant archeology to be done there. Instead, the widespread conviction existed that before the horse and gun, the Plains was virtually uninhabited. However, having already worked with Strong at Signal Butte, in the Loup River Valley and eastern Nebraska, Wedel realized this was a false viewpoint; Indians had occupied the Plains for centuries. He made up his mind that he wanted to learn more about these Plainsmen and how they adapted to the changing Plains environment.

It was Carl Sauer, geographer at the University of California, who stimulated Wedel to recognize the need for a long-term commitment to problems in the Plains. Wedel tells us (1977a:7):

> To be a regional specialist demanded not only a patiently acquired familiarity with the current landscape, but also learning how it was under past conditions and, most importantly, how it was perceived by the now-vanished peoples of another culture who were coming under study. I was prepared to accept what Sauer said of the historical geographer with regional specialization in mind—"Such work obviously cannot be done by sample studies ranging widely, but may require a lifetime given to learning one major context of nature and culture . . . . The human geographer cannot be world tourist, moving from people to people and land to land, and knowing only casually and doubtfully related things about any of them."

Wedel's determination to concentrate on archeology in the Plains area, along with his marked ability and a great deal of empathy for the Plains, has placed him in a position of preeminence in that field for decades. No one has matched his contributions over the years and he has no heir apparent.

Wedel's undergraduate work, commenced at Bethel College in North Newton, Kansas, was completed in 1930 at the University of Arizona under Dean Byron Cummings. At that time no university in the Plains offered a graduate degree in anthropology, so Wedel chose Arizona. Even before going there, he purchased and read A.V. Kidder's *Introduction to Southwestern Archaeology*, a volume which greatly impressed him, particularly for its presentation of the continuity between prehistory and the present. In addition to serving on a crew excavating a prehistoric site in Arizona during his undergraduate days, Wedel had the opportunity to visit the Hopi pueblos. With regard to his Arizona experience, Wedel (1977a:3) writes:

> For me, as it has been for countless others from regions with lesser monuments of antiquity, the archeology of the Southwest—its cliff dwellings, casas grandes, irrigation works, etc.—were wonders indeed. So were the Hopi pueblos, to which the Dean's summer field parties were taken as a reward for their season of unpaid labor in the pits at Turkey Hill Pueblo near Flagstaff. A heavy rain shower had just passed over the Hopi mesas, and drenched rabbit-fur robes and other textiles had been hung on lines to dry. Along with the nearby wet garbage dumps, these lent a peculiar pungency to the otherwise clean fresh desert air—perhaps something like Henry Brackenridge experienced during his visit at the Leavenworth Arikara village in 1811.

A few years later at the urging of A.E. Kroeber, Wedel participated in an ethnographic field school directed by Ralph Linton among the Comanche in Oklahoma. In focusing on material culture, Wedel discovered for himself that artifacts like those he had found in prehistoric Nebraska sites (Wedel, 1977a:4) were still made and used by modern Indians. Through both his academic training and his field experience, cultural continuity became a reality in his thinking.

The year 1936, when Wedel's doctoral dissertation "Some Historical and Ethnic Aspects of Nebraska Archeology" was accepted, was a vintage year for anthropologists. That year Harold Driver received his doctorate, also from California; Clyde Kluckhohn and David Mandelbaum received theirs from Harvard and Yale, respectively; and James Griffin received his from the University of Michigan.

Although Wedel has worked at archeological sites outside the Plains, namely, in California at Buena Vista Lake (1941a), in San Francisco Bay shell mounds, and elsewhere; at La Venta, Tabasco, Mexico (1952), and in the Virginia area (Stewart and Wedel, 1937; Wedel, 1951), his

career of 50 years has centered in the Plains area. He has carried on excavations in most of the Plains states: South Dakota, Nebraska, Kansas, Wyoming, Colorado, and Texas; and in so doing he has explored cultural remains of Indians of the paleolithic period, of the prehistoric periods (Archaic, Central Plains, Nebraska Culture, and so-called classic Oneota), and of historic Pawnee, Kansas, and Wichita. It is his vast experience in the Plains as a whole and his interest in broadly based anthropological research problems dealing with culture continuity and change, with dynamic problems of the relationship between man and his changing environment, and with the interaction between neighboring Indian groups that have prepared him for writing general summaries of Plains prehistory, certainly the best ever presented. They have appeared in his book *Prehistoric Man On the Great Plains* (1961a) and subsequently in chapter-length expositions (1963, 1978b, and revision of 1963 now in press). Other archeologists have published monographs on specific sites and subregions or have included summaries of Plains prehistory as parts of broader treatments of prehistory, but none has provided comparable Plains-wide syntheses.

The title of "Dean of Plains Archeology" would be completely appropriate for Wedel today. However, in his autobiographical article, Wedel (1977a) recognizes and appreciates the value of the groundwork laid before his professional career took shape by individuals without professional training in archeology, as for example, in Nebraska, E.E. Blackman, A.T. Hill, and Robert Gilder (for others, see Wedel, 1981). He also acknowledges the inspiring influence that William Duncan Strong had on his developing professional orientation, as will be noted. What does not come out is the influence that Wedel, the student, had on the thinking of his mentor and good friend. When Wedel entered the University of Nebraska in 1930, Strong had been in the anthropology department there for only a year, having come directly from ethnographic field work in Labrador. However, Strong had done some archeology on the northwest coast where he had grown up. Wedel was a Kansan by birth and the Plains were a part of him. A fruitful exchange of ideas prevailed. Interestingly, it was Wedel who plugged for the classificatory term "Upper Republican," finally persuading his professor to substitute it for "Prehistoric Pawnee," Strong's original name for that category of archeological materials. It was Wedel, too, who later refined and continued to make more precise Strong's first temporal and geographical ordering of Central Plains archeological units resulting, among others, in the classic presentations titled "Culture Sequence in the Central Great Plains" (1940), and "Culture Chronology in the Central Great Plains" (1947).

Wedel's influence on the development of archeology in areas outside the Plains has been far greater than his outlying field work would suggest. It has been primarily methodological. Wedel was one of the early proponents of studies involving environment and prehistoric peoples. His paper (1956) on changing settlement patterns in the Great Plains was an early presentation of that concept. Through his own effective use of the "direct historical approach" and explanations of benefits to be derived from the methodology, he has persuaded a number of others to employ it. More subtle has been his influence on other scholars through his caution in interpretation and his insistence that it be based firmly on hard data. Much of his field work has been problem-oriented in order to provide the data base necessary for sound interpretation.

During Wedel's student days, much of the emphasis in Plains archeology was on taxonomy. The Midwestern Taxonomic System had recently been formulated by W.C. McKern (1939) and others. Plains archeology still shows its linguistic survivals. Some of Wedel's early writing reflects this concern with taxonomy, but where he presents trait lists, he shows none of the preoccupation with taxonomy as an end in itself common at the time. Even when using the Midwestern Taxonomic System, Wedel concentrated on the smaller units—components, foci, and aspects—where he was close to the basic data. He has been more concerned with diagnostic traits or index artifacts than with percentages of traits. At times

he has viewed statistical and computer studies with suspicion especially when he feels samples are too small or that conclusions have slighted other kinds of pertinent evidence.

At the University of Arizona, Wedel had a class under the famed physiographer, William Morris Davis, who stressed relationships between man and his environment. Subsequently, while Wedel was at Nebraska, that university was an active center for ecological studies with such faculty as Irving H. Blake, David D. Whitney, Harold W. Manter, and, especially, John D. Weaver, all of whom were building on earlier work by such scholars as Charles Bessey, Roscoe Pound, F.C. Clements, and Paul Sears. The same year that Wedel arrived at Nebraska, William Van Royen, with similar interests, joined the geography faculty. Courses and personal conversations with Van Royen on archeology and physiography were particularly stimulating to Wedel and contributed substantively to his understanding and appreciation of the interaction between man and his Plains environment. In fact, Wedel stayed on at Nebraska for a year after he received his M.A. to take additional courses in geography, as well as anthropology, before going to the University of California. There he was discouraged by Kroeber in the pursuit of his developing interests. He did, however, find a sympathetic faculty member from the Department of Geography, Carl Sauer, who further stimulated his interest in ecology. As Wedel (1977a:6) recalls:

> It was Sauer whose lectures and teaching were of prime significance in formulating my own later approaches to Plains human ecology. His course in North American geography, drawing freely from geology, climatology, paleontology, archeology, ethnography, history, folklore, and other disciplines now forgotten to me, epitomized his philosophy that "all knowledge is one," and there are many ways to search for it.

It is indeed fortunate for Plains archeology that Wedel determinedly persisted in viewing the physical environment as an important factor in the shaping of cultures. Previously some authors had carried such ideas to the extreme of environmental determinism, but Wedel pioneered in putting environmental interpretation on a sound scientific footing. His "Environment and Native Subsistence Economies in the Central Great Plains" (1941b) and "Some Aspects of Human Ecology in the Central Plains" (Wedel, 1953a, 1961b) are classics. He has also focused on more limited studies pertaining to Indian use of the environment, as in his recent research (1978c) on the prairie turnip, a plant whose root was an important food resource for many Plains tribes. This has involved visits almost annually to the natural prairie near Salina, Kansas, maintained by Joyce and Nick Fent, where he has observed, photographed, dug, and eaten the turnip.

Wedel has perpetuated other of Sauer's teachings in being a strong advocate of the multidisciplinary approach. He believes in combining archeological evidence with that from disciplines outside anthropology (e.g., geography, ecology, climatology), as well as with evidence from other anthropological subdisciplines (e.g., ethnology and ethnohistory). In so doing, he has been able to provide a rich understanding of the dynamics of past cultures. The recent publication edited by him, "Toward Plains Caddoan Origins: A Symposium" (1979) is an illustration of this interest. In addition to using professional sources, Wedel has queried ranchers and farmers for information based on their firsthand experiences and observations in the Plains, in relation, for example, to problems concerning Indian agriculture or durability of earthlodge timbers. He has always listened to amateurs and has acknowledged benefitting from information gained from them.

Wedel has long been particularly interested in consulting documentary sources as an aid in archeological interpretation. Under Strong's tutelage, and with the cooperation of A.T. Hill, Wedel in 1930 applied to Nebraska archeology, specifically Pawnee, what he apparently was the first to call the "direct historical method" (1938a), a form of ethnohistory. Wedel wrote nostalgically of this experience (1977a:3):

> To me, at Nebraska in 1930, he [Strong] assigned as an M.A. project, the task of analyzing the historic Pawnee materials already assembled in Nebraska—a truly pleasant experience in graduate study, with Strong playing the master and I the apprentice. It was a mutually satisfying program,

Strong himself writing long years later that he regarded the Nebraska field work as the start of his career in "real" archeology.

Strong's name is closely linked, of course, with the direct historical approach, subtitled by him as "proceeding from the known (documentary-ethnological) to the unknown (prehistoric-archeological)." He was not the first to apply it in the region but as a workable approach in a region where archeological research had lagged so far behind the ethnographical, he gave it respectability and durability. In undertaking it, he was also taking advantage of the fact that a dedicated local non-professional, A.T. Hill, had already carried out much of the documentary and preliminary field work on the Pawnee, and had located and surface-hunted most of their sites of the 19th century.

The master's thesis that resulted from this study was titled "An Introduction to Pawnee Archeology" (1936). It linked historic occupation of certain Pawnee bands with specific archeological sites.

An important section of Waldo's tome "An Introduction to Kansas Archeology" (1959) presents ethnohistorical data on the historic Indians of that region. Wedel (1941c, 1942) persuasively confirmed the identification proposed by Jones and Bolton (Bolton, 1949:291, 293) for the location of sixteenth and early seventeenth century "Quivira" between the Great Bend of the Arkansas River and the Smoky Hill River. This was accomplished through excavation in a number of village sites where chain mail and Southwestern pottery were found, an archeological category he named the Great Bend Aspect, and by further study of Coronado and Oñate documents that detailed the land visited by the Spaniards.

Another feature of Wedel's interpretive research has been his humanistic viewpoint. As he considers archeological remains, he is always thinking in terms of the people who made and used them.

As a basis for his interpretive studies, Wedel has done a monumental amount of field work in the Plains, which is attested to by his extensive bibliography. His earliest fieldwork in the region was with W.D. Strong, but his earliest publications resulted from summer fieldwork carried out, during postgraduate years at California, under A.T. Hill, then with the Nebraska Historical Society. Materials from the Leary Oneota site, excavated by Hill in 1933–1934 and 1935, were analyzed and reported upon the following year (Hill and Wedel, 1936) after Wedel's departure from California. Immediately before joining the Smithsonian Institution, Waldo made pottery collections from numerous sites in Nebraska for Gila Pueblo, the research organization founded by Harold Gladwin. This was a project prompted by similarities between cord-roughened pottery found in Asia and that found in North America.

Shortly after joining the Smithsonian in 1936, Wedel turned his attention to a Hopewell site (1938b) and a Middle Mississippian one (1943) in the northwest corner of Missouri, western manifestations of archeological cultures better known farther to the east. These, plus several of his shorter papers, have provided the basis for interpretation of the prehistory of the Kansas City region, one that has not been significantly altered by subsequent research at the same sites. It was in this period that Wedel made some of the earliest, if not indeed the earliest, aerial photographs of archeological sites in the Great Plains. These include the Renner site, Platte County, Missouri, on 25 June 1937 (1943); Buffalo Pasture and Sully Village sites, South Dakota, on 28 July 1939 (1947); and Medicine Creek, Nebraska, on 1 and 10 July 1948 (1953b). Thereafter a survey of Kansas archeology was begun, which culminated after a quarter of a century in his "Introduction to Kansas Archeology" (Wedel, 1959), a major portion of which reports his own field work. Since the appearance of this monumental work, Wedel had devoted four additional seasons between 1965 and 1971 to excavation at protohistoric Wichita (Great Bend Aspect) sites. It was during this period that he recognized a possible orientation of three villages of the Great Bend Aspect with solstice readings (1967, 1977b), an archeoastronomical interpretation that stimulated searches for other structural evidences of astronomical phenomena in the Plains.

The Kansas survey was interrupted when Wedel served from 1946 to 1949 as field director of the Smithsonian Institution's Missouri River

Basin Surveys, established to salvage archeological and paleontological material threatened with destruction by the building of numerous dams in the Missouri River basin. It fell to him to organize and quickly make operational this wide-spread program that required the cooperation of several government agencies and many diverse institutions. His numerous summaries, published between 1947 and 1967, of work carried out under the auspices of the River Basin Surveys provide overviews of this massive project.

In 1951 Wedel turned his attention to an Arikara site (39ST1) located at the mouth of the Cheyenne River in South Dakota, where he continued excavation in 1955–1956. These materials are now being analyzed. Wedel participated as archeologist in two Smithsonian archeological-paleontological expeditions, one at the Wyoming Horner site in 1952 in collaboration with Glenn Jepsen of Princeton University where paleolithic man had hunted bison, and at the Lamb Springs site near Littleton, Colorado, in 1961–1962, where piles of similar bison and mammoth bones suggest early man, possibly pre-Clovis, had hunted. Dennis Stanford of the Smithsonian continued the excavation program at this site in 1980 (Stanford, Wedel, and Scott, 1981).

Two summer seasons were spent at an archaic site in Chalk Hollow, in the Texas Panhandle near Canyon. There in the canyon wall, Wedel (1975) exposed a chronology of archaic manifestations that extended over a period from 1600 B.C. to A.D. 800.

In addition to Wedel's brilliant research career, he has had substantial administrative experience. In the Department of Anthropology at the Smithsonian, which he joined in 1936 as assistant curator of archeology, he ultimately became curator of archeology in 1950. During a critical period, he headed the unit then called Office of Anthropology. Retiring from the position of senior archeologist in 1976, he now serves as archeologist emeritus, continuing to go to his office three days a week and to maintain an active research career. Wedel has been a staunch supporter of the anthropological profession. He has been a regular participant in the Plains Conference. He served as secretary of the Society for American Archeology for several years in the 1940s, ultimately becoming its president in 1948–1949. He was president of the Anthropological Society of Washington in 1951–1952.

The outstanding contributions of Wedel have not gone unrecognized. He was recipient of the 1947 award in biological sciences from the Washington Academy of Sciences for distinguished service in investigations of prehistory of human ecology in the Great Plains. In 1965, he was elected to the National Academy of Sciences, and in 1971 received a Distinguished Alumnus Award from Bethel College. The University of Nebraska awarded him an honorary doctorate in 1972; the citation reads: "In recognition of his outstanding leadership in understanding the cultural evolution of the Plains peoples, with appreciation for his efforts to emphasize the importance of the natural environment in the area, and with pride for his performance as an Alumnus. . . ."

Finally, Wedel's profound influence in the shaping of the careers of younger archeologists for nearly a half century is perhaps unique in that he has never been a member of a university faculty. Faculty members have in their students a captive audience to whom ideas, methodology, and interpretations are transmitted. Wedel, a professor without a classroom, has exerted his influence through the strength of his publications and papers and through his contacts with students who have worked with him in the field and as Smithsonian fellows. He has always been willing to talk with and advise students.

Perhaps the real indication of Wedel's eminence is to be seen in the literature with over one hundred thirty publications at last count, most of these items reflecting original research and knowledge gained from wide reading. Not only is the bibliography extensive, it is solid and well written. Wedel is recognized as a superb writer, which explains in part his irritation with those who substitute jargon for adequate English.

No one else has his comprehension of Plains archeology: perspectives that grew in the Plains.

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Reminiscences

T.D. Stewart

ABSTRACT

This essay represents a look at the climate of Smithsonian science at the time Wedel and Ewers began their careers at the Smithsonian Institution.

I accepted the invitation to make some appropriate after-dinner remarks about Jack and Waldo, the two honorees, with some misgivings. Both men value their privacy and hence have maintained a low enough profile in their respective branches of cultural anthropology as to make it difficult for a physical anthropologist to say anything professionally revealing about them. I decided, therefore, that the most appropriate—and for those who have come from afar perhaps the most interesting—thing I could do would be to reminisce about the climate of science at the Smithsonian in the 1930s and 1940s, and especially at the times—10 years apart—when the honorees first became associated with this venerable Institution.

Reminiscing, I have read, is an effort of an elderly person to recapture his or her youth. I will be 79 years old this year and will have spent 56 of these years at the Smithsonian, so I hope you will indulge me in a bit of questing for youth. My aim will be two-fold: first, to rekindle the memories of some of those present and to bring to the attention of others certain events influencing the honorees during the period mentioned; and second, to throw light on the question: How has the Smithsonian succeeded in keeping these two men here so long and enabled them to accomplish so much? Let's begin with Waldo, the first to arrive.

The 15th of August 1936, is the date of Waldo's appointment as assistant curator of archeology (the grade of associate curator had not yet come into frequent use). Franklin Roosevelt's first term, with its New Deal, was just ending. Although the country was recovering from the Great Depression, unexpected riches descended upon the Smithsonian during the Government's fiscal year 1937, between 1 July 1936 and 30 June 1937, which included the date of Waldo's arrival. Secretary Abbot (1938:1) told about it in his report for that year:

> The most notable event of the year was the establishment of the new National Gallery of Art as a bureau of the Smithsonian Institution, the result of the munificent gift of Andrew W. Mellon of his great art collection and funds exceeding $10,000,000 for the construction of a suitable gallery building.

As we know now, this statement underestimates the true value of the Mellon gift and fails to indicate its potential to influence the cultural life of the Nation's capital. Waldo may not have paid much attention to the new development, but I was greatly stirred by it, because I was into art to the extent of being a member of Herbert Friedmann's art group that met Friday evenings to draw, paint, sculpt, or whatever. Friedmann, then the curator of birds, had made art history his hobby. This is but one example I could mention of the stimulation to be gained by association with members of other Smithsonian departments.

Waldo's apointment was the culmination of a

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phase of the game of musical chairs that goes on all the time in the Smithsonian. But this phase was a bit different. Dr. Walter Hough, a long-time head curator of anthropology, had died a year earlier, in September 1935. Normally, he would have been succeeded by one of the three curators under him. In order of seniority, this would have been either Aleš Hrdlička in physical anthropology, Neil Judd in archeology, or Herbert Krieger in ethnology. As it happened, however, these three were not on speaking terms with one another. Faced with this situation, Alexander Wetmore, then director of the National Museum, reached down to the next level in the hierarchy and picked Frank Setzler, Judd's assistant curator, to be acting head curator. But more of this later.

It was the vacancy created by the shift within the Department of Anthropology that Waldo had been picked to fill. The following facts suggest that his selection was not by chance. Duncan Strong, under whom Waldo had studied archeology at Nebraska and under whom he had done fieldwork in the Plains, had joined the staff of the Bureau of American Ethnology five years earlier. Also, Waldo had gone from the University of Nebraska to the University of California at Berkeley to take his doctorate, and the latter place is where Strong had taken his doctorate. Moreover, the Bureau was just publishing a monograph by Waldo on Pawnee archeology (Wedel, 1936). All of this means, it seems to me, that Waldo had a great advantage over other candidates (if any) for the position.

By 1936, Neil Judd, Waldo's chief, had almost completely given up fieldwork, the last of which had centered on Chaco Canyon in New Mexico. Instead, he was devoting much of his time to housekeeping chores in his Division, and especially to the accessioning of the vast collections resulting from Civil Works Administration and Works Progress Administration archeological projects—those ingenious devices of the Roosevelt administration for giving people employment while the economy was returning to normal. Thus, although Waldo was expected to assume his portion of the curatorial workload, to attend to some of the visitors, and to answer certain letters from the public, he did not have to compete with Judd for fieldwork opportunities.

In fact, Waldo was presented with opportunities for fieldwork almost immediately. One of the least of these was a salvage job in physical anthropology. Two Indian ossuaries had been exposed during the grading of a runway at Bolling Air Force Base across the Anacostia River from Washington, and, in September 1936, Waldo and I spent a weekend removing the bones (Stewart and Wedel, 1937). At the time, I hoped that this trip to the Maryland side of the river might arouse Waldo's interest in eastern archeology, but nothing much came of it. His only activities in this direction, so far as my knowledge goes, consisted of occasional weekend visits to sites up the Potomac River with some of the local amateurs. Once later, when I had occasion to take him over to Rehoboth, Delaware, to a meeting of the Sussex County Archeological Society, I realized, as Figure 2 shows, that Waldo was content to assume the pose of an onlooker, so far as fieldwork in the East was concerned.

Subsequent events confirm that Waldo was not about to be distracted from the career in Plains archeology that he had embarked upon. His first field trip back to the Plains under Smithsonian auspices began in May 1937, just nine months after the date of his appointment. One reason for this prompt return to the Plains and the many repeats since then was a succession of exciting finds. Figure 3 offers an example of one of these finds. It shows Waldo and George Metcalf, his long-time friend, looking in awe at something they have uncovered and probably muttering "What in hell is it?"

Encouragement to pursue fieldwork was not the only attraction that the Smithsonian had to offer Waldo. At the conclusion of his 1937 field season, he summarized the results of that season in a volume of the Institution's series devoted to exploration and fieldwork (Wedel, 1938a). At the same time the *Proceedings of the United States National Museum* (Wedel, 1938b) carried his account of one of the sites explored during the 1937 field season. The availability of such widely distributed

FIGURE 2.—Waldo looking on as members and guests of the Sussex County Archeological Society excavate a pit in the vicinity of Rehoboth, Delaware, ca. 1950.

outlets for prompt publication is in itself no mean attraction. I think you will agree that, in view of all this, Waldo must have found the climate of science in the Smithsonian to his liking.

Let me now set the stage for Jack's arrival. It has long been my opinion that Setzler's advancement to the head curator's office was due largely to the fact that he made a special effort to ingratiate himself with his elders; not only those on the staff of the Anthropology Department in the Museum and on the staff of the Bureau, but those at the top of the Museum and even at the top of the Institution itself. He carried this endeavor to the extreme of calling these distinguished elders by their first names. No one else had the temerity to call Wetmore "Alec," Hrdlička "Aleš," or Swanton "John"; yet Setzler did and apparently they liked it. Indeed, the three anthropological curators liked it so much that they acquiesed in Setzler's advancement over them.

The person who was most affected by Setzler's selection for advancement was Henry Collins. Collins had been appointed assistant curator in ethnology in 1924, six years before Setzler arrived. Not only did he have this much seniority, but by 1936 he had become one of the foremost authorities on the Eskimo, with an outstanding record of fieldwork and publication. In that year, in fact, Collins received from the King of Denmark in person a gold medal in recognition of his accomplishments. However, if Collins protested to Wetmore about the unfairness of the selection, it did no good, for in July of 1937 Wetmore abandoned the pretense that Setzler was simply "acting" as head curator and made him full curator. Largely as a result, Collins transferred to the Bureau of American Ethnology in February 1939. His arrival there coincided with that of another new Bureau member, William Fenton, a participant in this symposium. Now the stage was set for the

FIGURE 3.—Waldo and George Metcalf (with pipe) contemplating an exposed archeological feature at the Hayes "Council Circle" site near Lyons, Kansas, 1967.

next phase of the game of musical chairs—this time in the Division of Ethnology.

Herbert Krieger, the curator of ethnology, came to the Smithsonian in the same year as Collins—1924. How he came to be selected for the position is not stated in the annual report of the Museum, the only source I have consulted. I met Krieger soon after he arrived, because 1924 was also the year I began serving as Hrdlička's temporary aide. I found Krieger agreeable enough, but often, no matter how good a reason I had for engaging him in conversation, he appeared to suspect me of having some underhanded motive and of attempting to put something over on him. I was not alone in recognizing Krieger's eccentricity, but evidently the latter was not an impediment for anyone working in his Division, as is evident from Collins' fruitful 15-year record there.

From my knowledge of Krieger's manner of operation, I judge that he relied on Setzler to pick Collins' successor. Anyway, W.W. Hill of Albuquerque, a cousin of Matthew Stirling, chief of the Bureau of American Ethnology, was the first pick. He arrived in February 1939, but stayed only until January 1940, before returning to the University of New Mexico. Hill was followed in March 1941 by J.E. Weckler, Jr., of Los Angeles, who stayed only long enough to write one of the Smithsonian's War Background Studies (Weckler, 1943) before resigning in January 1943. Whatever Hill's and Weckler's reasons for not staying in Washington, certainly it can be said that they found no satisfactory way to profit from the climate of science in the Smithsonian. This brings us to Jack.

After Collins left the Museum it took Setzler and Krieger seven years and a third try before they found someone—meaning Jack—who would stay in the Division more than three years. The date of Jack's appointment is June 1946. Like Hill and Weckler before him, Jack came in as an associate curator. Waldo had been made associate curator in 1942. But whereas originally Waldo had come in out of the Great Depression, so to speak, Jack came in out of military service in World War II. And on the other hand, whereas Waldo had come in during the first term of Roosevelt's long administration, Jack missed by one year coming in during the last term—Roosevelt died in 1945 and was succeeded by Harry Truman.

Administrative changes had occurred within the Smithsonian, too. In addition to those mentioned, Secretary Abbot had retired in 1944 and had been succeeded by Wetmore, who nevertheless continued on as Director of the National Museum. The big happening in 1946, though, was not administrative: the Institution celebrated its 100th anniversary that year. Among other

FIGURE 4.—Jack's interest in Indians is already apparent in this childhood picture of him and his brother.

anniversary events, a special convocation, scheduled to coincide with the fall meetings of the National Academy of Sciences and the American Philosophical Society, was held in the Natural History Building. On that occasion Matthew Stirling gave an illustrated lecture on his work at the Olmec site of La Venta in Mexico. I mention this because Waldo spent a field season with Stirling at La Venta in 1943.

Returning to Jack, it is evident from Figure 4 that he came by his interest in Indians at an early age. Skipping to 1934, he participated that year in a museum project of the Works Progress Administration. Then from 1935 to 1940 he was field curator in the National Park Service, and from 1941 to 1944 was curator of the Museum of the Plains Indians at Browning, Montana, an important development of the Bureau of Indian Affairs. In one or other of these capacities prior to entering military service he visited the National Museum and met some of the anthropologists on the staff, including Setzler. It was Jack's good luck, therefore, when he saw his war service ending and inquired about openings in the National Museum, that Setzler happened to be casting about for the third try at filling the vacancy created by Collins' transfer. With the cooperation of his wife, Marge, who had already come to Washington, Jack landed the job.

Jack already had an impressive publication record before beginning work in the Division of Ethnology. As early as 1939, for instance, he had published through the Stanford University Press a book on Plains Indian paintings (Ewers, 1939). Then between 1943 and 1945 he published in the *American Anthropologist* three impressive papers dealing with historic sources relating to cultural practices of the Indian tribes of the Northern Plains with special emphasis on the Blackfeet. The subject matter of these publications indicates that Jack, like Waldo, had settled on his research career before coming to Washington. I judge, therefore, that employment in the Smithsonian initially attracted Jack because of the opportunity it gave him to continue his already well-advanced ethnographic studies of the Northern Plains tribes.

Whether or not Jack knew that Setzler was beginning to think about modernizing the anthropology exhibits in the Natural History Building—exhibits that had not been changed substantially since the building was opened in 1911— I have not learned. In any event, when the time

came Jack's extensive previous experience in museology enabled him to make important contributions in that direction.

Although early in fiscal year 1947 Jack was settled behind a desk at a great distance from the Plains, as in Waldo's case, his continuation of fieldwork was not out of the question. The record shows that during the fiscal year Jack spent three months at several reservations in the Northern Plains. Just then, fortunately, he could avoid conflict with Krieger's absences on field trips, because the latter's interests had turned from the Northwest Coast to the Carribean where the best time for work is in our winter months.

Figure 5 shows Jack in the cluttered room that served as his office during his early years in Washington. None of the Indian pictures that hung on the walls of that office appear in this photograph, unfortunately. Indian pictures, and especially those by Catlin, are among the Smithsonian's greatest historical treasures. Incidentally, the Catlins are now housed in a Smithsonian art gallery built in 1840, the date they were first shown in Europe. Noteworthy, too, is the fact that the National Gallery of Art, that great gift to the Nation mentioned earlier, has acquired some other Catlins. Less conspicuous, but no less important as historical treasures are the records of early Indian visitors to Washington. Many such records, formerly in the Bureau's archives, are now a part of the National Anthropological Archives in the Natural History Building. Doubtless the opportunities to work with these treasures at first hand was another part of the climate of science at the Smithsonian that kept Jack in the Division of Ethnology beyond the three-year limit of his immediate predecessor and later brought him back after he was lured away for a few years to help design and open the Institution's new History and Technology Building (now the National Museum of American History).

In conclusion, it should be noted that Waldo and Jack are now enjoying a traditional part of the climate of science at the Smithsonian; namely, the privilege of continuing to occupy the same, or equivalent, office after retirement. Abbot stayed past the age of 100; Wetmore finished his reports on the birds of Panama while he was in his nineties; Judd stayed on long enough to finish his Pueblo Bonito reports; and here I am, busier than ever eight years after retirement. All of this should be encouragement to Waldo and Jack to carry on as long as they can.

FIGURE 5.—Jack amid the storage cases in the first office he occupied in the Natural History Museum.

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An Historical Character Mythologized: The Scalped Man in Arikara and Pawnee Folkore

Douglas R. Parks

ABSTRACT

In Plains warfare individuals occasionally survived scalping. Called "scalped men" by the Arikara and Pawnee, they were considered to be no longer human and were forced to live a solitary existence outside the pale of human society. The scalped man as a character has uniquely permeated Arikara and Pawnee folklore. He occurs variously as an historical personage, as a legendary figure who is a benefactor or bestower of supernatural power, and as a legendary character in a mythological context. Further, he appears as a comic and a bogeyman. In these different roles he illustrates how an historical individual was evolving into a mythological figure.

The Arikara story "The Origin of Summer in the North" presents an interesting problem for the folklorist. That the reader may appreciate this problem, a translation of the myth as told by Not Afraid Of The Enemy (*Pa:túh Kananu:ninó*) is given here in its entirety.

Long, long ago when we people were not yet living on this earth, when the ways were holy on this earth, there was no summer here in this country. It was truly cold—always winter. Oh, it's not known how long the time lasted when it never got warm, when it would just always be winter.

Now a raven came along. It's not known whence he came. Then came a coyote, and then a scalped man. Now there were the three of them, and they said. "Oh, everything is so difficult for us when it is winter all the time, never getting warm, just winter, winter. It would certainly be nice if it were warm and green grass were to come up for these buffalo and the other creatures roaming around here to eat. Instead, it is just winter, and it makes things difficult."

While these three were talking about the situation, Raven said, "Say, there is one living who controls things where it is summer. (It is the sun.) If we were to steal his child and bring him here, the sun will come looking for his boy. He will follow us."

One of the others asked how they would do that, and Raven said, "We will go south to where he lives. Now, truly I know where he lives. I know where the sun's lodge is."

Then they went in a war party, going after summer so that it would be warm some of the time where we live here. Raven led them to the place, wherever it was. Then he announced, "Here is the place; this dwelling belongs to the sun, and this is where his son lives. Now, Scalped Man is going to be the one to enter it. While the boy's father sleeps, he will bring the boy here. The boy is a ring (or hoop) and is hanging up in there. You, Scalped Man, will take the ring, and when you exit they are going to chase you. Oh, they watch over him. They watch over him; so after you enter and then come out, I'll be right there. You will put the ring around my neck, and I'll come flying north for as long as my strength lasts. Now this one here, Coyote: When I arrive where it's winter, Coyote will be the one to take the ring. He'll carry it for as long as his strength lasts. The heat is going to follow us, so that summer will come when they chase us."

Now that is what they did. Scalped Man entered the lodge. Since he could see well at night, he found it after looking all around. He took the ring and went out. He gave it to Raven, putting it around his neck. Raven then flew up and ran away with the boy as the tribe of people—whoever they were—were yelling back there.

This is what they used to tell: They began chasing after Raven, but Scalped Man was holding the crowd back so that the pursuers would not shoot Raven. He was holding them back as Raven came north.

Finally Raven said, "My strength is gone now," and then

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he arrived where Coyote sat. The ring was put around the head of Coyote, who said, "Truly, no one ever overtakes me." Then Coyote ran with all his strength, coming, coming, coming. After four days, his strength left him, and Coyote sat down tired. "Let me sleep a little while, and then I'll regain my strength!"

After he lay down and began to sleep, some birds came flying up to Coyote. Whatever kind of bird it was, it picked up the sun's boy and turned back with him. Now right there is where the northern boundary of summer is, here where we live. It isn't known how things would be if Coyote had retained his strength. But he was tired when he sat down and slept. He thought, "Let me sleep just a little while!" Had he gone further north again, it isn't known what it would be like.

Now this is what happened when summer first came here. It became winter again; and then summer returned. That is the way things came to be as they are now.

This story is an Arikara version of the widespread Promethean myth, which, in variant forms throughout North America, accounts for the origin of daylight or fire on earth. Here it accounts for the origin of summer in the Northern Plains. In all its manifestations throughout the continent, the story has two common features. The event occurred during mythical times, before the earth had completely assumed its present order and human beings had occupied it. Further, the theft of either the sun or fire is attempted by animals. The specific cast of animals varies in the stories of different tribes, but it always consists of animals. What is peculiar to this Arikara version is that one of the characters, Scalped Man, is not an animal, but an historical figure, a human being who had been scalped in battle and survived. At first blush, then, Scalped Man is an anomaly—a human character misplaced in a prehuman context.

A study of Arikara folklore, however, reveals that Scalped Man is not really anomalous in this story. His occurrence here is actually a natural extension of the roles he plays in other types of stories in the folklore of the Arikara as well as the Pawnee. These two tribes are closely related Northern Caddoan tribes, which formerly resided in the Dakotas and Nebraska, respectively. In their oral traditions, the scalped man is, indeed, a prominent figure whose portrayal is varied. In many instances he is a real character—an unfortunate individual who lurks outside the pale of his former human society—and is the subject of anecdotes about encounters with him. Other stories, however, do more than merely relate simple encounters. In one type, he becomes a benefactor for a relative or for a lone hunter, who then rises to social prominence. An extension of these are the blessing, or medicine, stories, a type in which the scalped man, who is a legendary character, bestows supernatural gifts on an individual, giving him mysterious powers for success in war, hunting, and medicine. In these stories, too, the recipient rises to social prominence through the powers he has acquired. Beyond these, there are at least two truly mythological stories into which Scalped Man, the legendary figure, has become integrated. Finally, in addition to these roles, Scalped Man also appears in incipient form as a comic in humorous stories, and among the Pawnee he was impersonated in dance as an institutionalized bogeyman.

The purpose of this paper, then, is to describe the scalped man as a character seemingly unique to the folklore of the Arikara and Pawnee—to examine the social attitudes towards him, to survey the various roles he played in the folklore, and to observe how an historical character was evolving into a mythological figure. The study is based on a collection of thirty stories, only half of which come from published sources.

The Historical Figure

In Plains warfare the practice of scalping an enemy was generally restricted to a dead foe, since it was a greater honor to touch, or count coup on, a live enemy (Grinnell, 1910). Usually, however, it was the man who lay unconscious on the battlefield, either from a blow on the head or a wound, who was mistaken for dead and was scalped. Since the removal of one's scalp was not necessarily fatal, many such victims later revived and lived. These survivors of scalping were known as scalped men (*tshunúxu'* in Arikara, *kicahúruksu'* in Pawnee). A person who had been scalped was said by the Arikara to be ruined (*tira:hú:'U* "he is

ruined"), since the act of scalping meant literally "to ruin" an individual. (The Arikara verb "to scalp" is *ra:huno.*) Once a person had been scalped, he left his human state: *tí' iciwiní:tu'* "he is transformed; he is different," no longer human. In this new condition he was unable to return to his village and his people. Shame forced him to live a solitary life thenceforward, forever shunning human contact. He established a domicile in a lonely or inaccessible location, and he restricted his travel and outside activities to the nighttime or dusk, unless he were sure not to be seen by human beings during the daytime.

The scalped man's dwelling (*tshuNUxáka*) was always a cave, generally on a steep hillside, where it was difficult to reach. There might be camouflaged stĕps up the hillside to enable him to reach the entrance, which was usually concealed by a door covered with brush or weeds and with a protruding root that was used to gain entry. In areas where there were no steep hillsides, a cave was dug into an embankment. Although the interior of the cave is usually not described in Arikara stories, in most of the Pawnee tales it is characterized as having wild sage strewn over the floor, with a fireplace in the center, a buffalo skull altar nearby, and a bed along the wall. Water either was obtained from a spring within the cave or was stored inside it in a cistern. Frequently, too, the cave was well supplied with valuable articles stolen either from the enemy or from the scalped man's own people. These articles might include parfleches of meat, brass kettles, shields, war clubs, bows, and even sacred bundles.

The dress of the scalped man varied. Sometimes he wore leggings and other standard articles of clothing, but sometimes he is portrayed wrapped in animal hides. Although he is depicted in several stories with his head exposed and scabby, he usually has his head covered to hide the wound and perhaps to hold the flesh of his forehead up so that the skin does not droop over his eyes. In Pawnee stories the head covering is frequently white sheeting; but in Arikara accounts it is invariably an animal-hide cap or an entire hide, generally a coyote's. When wearing a full hide, he is fitted with the animal's head over his own; and the body of the hide, together with the tail, trails down his back (Figure 6).

Against this background, we may now survey those stories which portray the scalped man as an historical character to see how he was perceived by Arikaras and Pawnees. Within this set there are eight stories—all basically anecdotal in nature—which recount simple encounters with a scalped man.

A nearly universal depiction of the scalped man, and the one most common in this set of stories, is a fleeting figure who evades human contact. This theme alone is the subject of several Arikara accounts. In one story (Parks, 1977:8–11), an Arikara war party came up a bluff overlooking the Missouri River and saw a scalped man on the bank down below. He was naked, since he had been washing his clothes, and was muttering in Arikara to himself as he drank from the river. When a member of the party called out to him, he jumped into the river, swam across it, and disappeared among the trees on the other side. The party came down to where his possessions were; and after inspecting them, they returned home. Sometimes later, the same men returned to this spot and there lay all his things, untouched; only his knife was gone.

In another story a man and his wife went on a hunting trip. During the day, while her husband was off hunting, the woman was tending to their camp, and when she looked up she saw a scalped man who stood at a distance with his chin resting on a horizontal tree branch. He wore a coyote headdress, the ears of which protruded upright. The woman was frightened and furtively picked up an axe, which she kept close by. All day the scalped man watched her; but at sundown, when her husband returned, he ran off. After she told her husband what had happened and how fearful she had been, they dismantled their camp and returned home to their village. In this, as in many other accounts, then, the scalped man is a frightening being who unnerved people, particularly women.

A Pawnee story (Dorsey, 1906:139–140) tells of

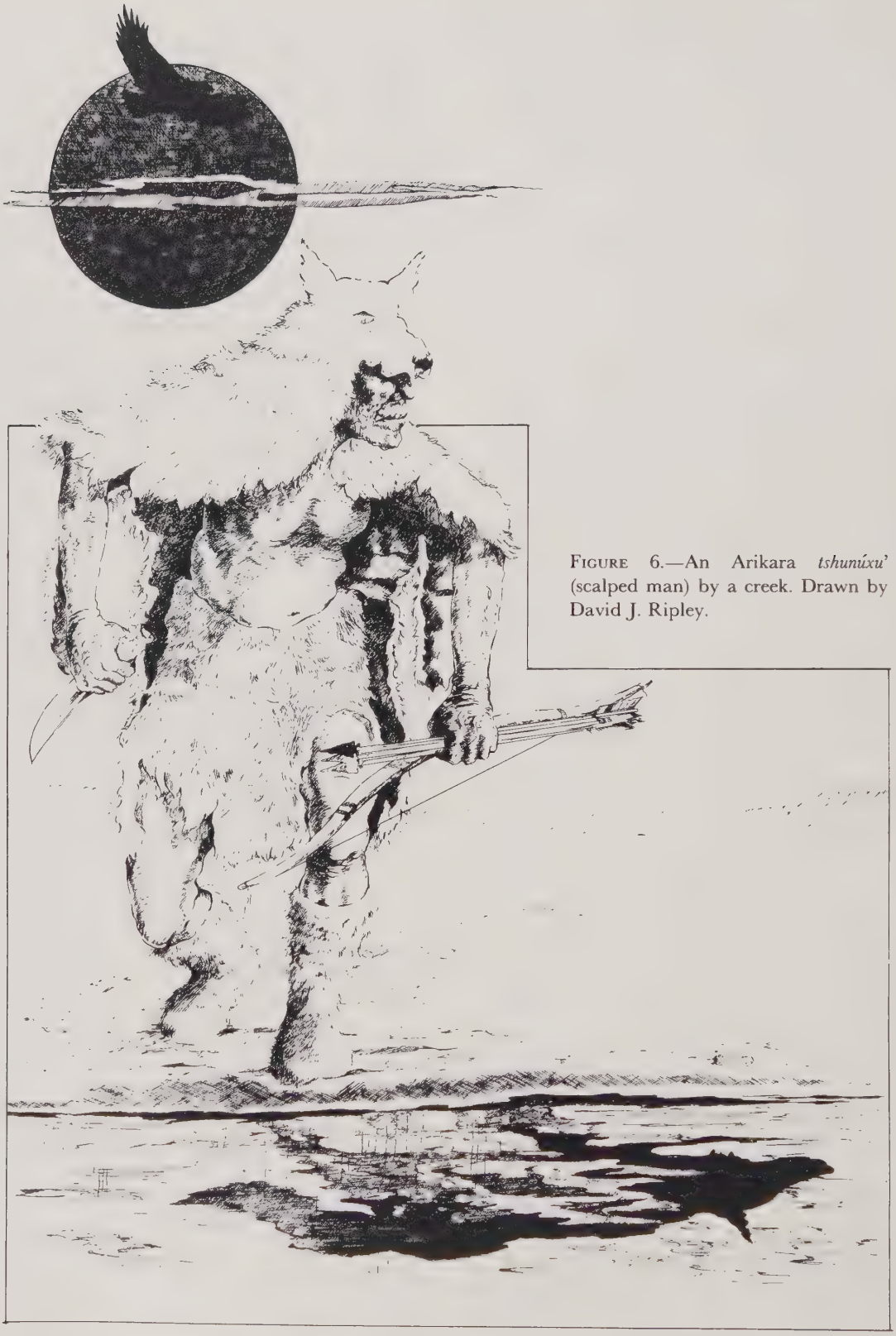

FIGURE 6.—An Arikara *tshunúxu'* (scalped man) by a creek. Drawn by David J. Ripley.

a war party that happened on an enemy village that was larger than it had expected to find. In the ensuing fight, all of the Pawnees were scalped but not killed. They went off to live in the hills; and years later a lone hunter came upon these scalped men in a grove of trees, where they were singing and dancing. He recognized them, and shot over their heads so that they ran off to their cave. He followed them, but was afraid to enter the cave, and so he returned home only to tell the people that the men whom they thought were dead were in fact scalped men.

Another portrayal of the scalped man is that of a thief, one who steals into the village at night after everyone is asleep and takes whatever he can. In many stories his home, when discovered, is found to be full of provisions taken from the village of his people. One Arikara story specifically makes this point. When the people were living in Like-A-Fishhook Village, someone repeatedly stole hides that during the tanning process were hung up outside at night. One evening a man determined to catch the thief, so he had his wife hang a hide up and then he lay in wait. When the thief came to take it, the man chased after him, but the thief eluded him. The man, nevertheless, trailed him relentlessly, even though while he was tracking him, the human tracks frequently turned into those of a coyote, then back to those of a human. Finally, the scalped man killed a deer and left the carcass to entice his pursuer to stop; however, it was not until the scalped man crossed a river by jumping on pieces of floating ice that he escaped. The man then returned to the village and told the people that it had been a scalped man who had stolen their hides and that they must stop blaming one another.

The scalped man occasionally stole women, too. In one story told by both the Pawnee and Arikara (Dorsey, 1904a:148, 1904b:78), he wanted a wife. After he caught a young woman who was outside the village, he started for his cave with her. But when they came to a creek, the girl persuaded him to submerge himself in the water and soak the scabs on his head so that they would peel off easily and he would not appear so frightful. Then while he had his head under water, she ran off, escaping home, while the pathetic scalped man cried in frustration about his unfortunate condition.

Within this set of stories there is, finally, one that depicts the scalped man as a joker who ridicules the sacred. A group of Arikara men who were on an eagle trapping expedition built a lodge and fitted it out with a supply of wood, a fireplace, and an altar consisting of a buffalo skull and a Mother Corn. After having prepared the inside, they put some ribs over the fire to roast while they were out in their traps. Later, they returned to the lodge only to find their belongings, the wood, and the ribs scattered around. The buffalo skull had been smeared with soot, so that it was now black; and a face had been drawn on the Mother Corn. Angered by this sacrilege, the men determined to catch the culprit. They rearranged the lodge, and the next day they hid themselves in holes nearby. Later a man came stealing to the lodge. After he was inside, the men came to the door. The intruder was talking to the skull and Mother Corn in Arikara, telling the objects that he had decorated them yesterday and here the men had subsequently spoiled them. When the men silently entered, they found a scalped man kneeling down in the center of the lodge, his back to them as he talked to Grandfather Skull. One of the men now called out to him, "Hey, you going around here, *I* wouldn't be doing those things if *I* had a village" (i.e., were a member of society). Startled, the scalped man jumped up; and when he saw all the men, he collapsed from shock. The men, assuming he had died of fright, left him lying there, picked up their belongings, and returned home. They told people what had happened: how this young man, who had supposedly died years ago, was alive as a scalped man; how he had ridiculed them; and how he had died of fright when they caught him. Later, the relatives of the young man went to find his body; but when they reached the lodge, he was no longer there. He had apparently revived and departed, never to be seen again.

The Provider

Several narratives relate that a warrior, after having been scalped, was revived by a mysterious being who gave him supernatural power and thereby made him holy. Subsequently, the scalped man himself was able to provide for the wants of others (either a relative or a lone hunter), so long as his identity was not revealed and he did not have any intimacy with humans. There is thus a small set of transitional stories that intergrade with the previous and following sets and that portray the scalped man as a provider for another person.

A popular Arikara story, which occurs in several forms (e.g., Dorsey, 1904a:149–151), tells about a lone hunter who, while lying on a hilltop, saw a scalped man kill a deer in the valley below and then disappear with it into the side of a distant hill. The hunter went to the spot where the scalped man had entered, and when he found the door he himself went in. The hunter then learned that long ago the scalped man had been killed in a battle and later he was revived and blessed by Night. Now he travelled at night as a spirit and was able to take scalps, capture horses, and catch eagles without difficulty. He asked the hunter what he sought; and when the scalped man was told that he wished for horses, he said that he would bring the hunter a herd. The man must, however, remain in the cave while he was gone and later must not reveal his identity or location to anyone. The next morning the scalped man returned with horses for him and said that the man was to give one of the horses to the scalped man's wife and son after he returned to the village. On numerous occasions thereafter, the man returned to the scalped man's cave to obtain horses, scalps, and eagles. He became known among the tribe for his bravery and finally became a chief. Years later, however, when he became ill, he told the people about the scalped man who was responsible for his success. A party then went to the scalped man's cave, but they found no one there. The scalped man had told the man that were he to divulge his, the scalped man's, location, he would know; and now the betrayed benefactor had moved to a new dwelling and was never seen again.

In a similar Arikara story a young man lost his brother in a battle and later could not find the body. After searching everywhere he finally discovered a scalped man who turned out to be his slain brother. This scalped man, too, provided the brother with horses, scalps, and eagles, but insisted that his identity and location not be revealed to anyone. As a result of the things his scalped brother gave him, the young man became noted among his people; but finally he tired of keeping the secret. When he told people how he had achieved his success, his *tshunúxu'* brother disappeared, never to be heard from again.

Melvin Gilmore (1933:39–43) recounted another Arikara story in this category. There was a man who had been scalped in battle, and his wife, thinking him dead, used to go outside the village to mourn for him. One day her husband, who had been watching her, revealed himself and explained that he had been blessed by a mysterious being but was to be forever separated from the living. Afterwards they met frequently, and her husband supplied her with provisions and other gifts. He, too, insisted that his identity be kept secret. One evening after they had been meeting, their old love overcame them and they had relations. The scalped man immediately felt remorse and expressed regret for having done something he should not have done, for now, he explained, he must die. He told his wife where his cave was and said that if he did not return to her the next evening, he would be dead. Then she and his relatives should come to the cave and divide among themselves the supplies that he had stored there. And indeed it happened as he had said. After he did not meet her the following evening, the woman told his relatives. The next day they went to the cave and there found his dead body. After dividing his accumulated supplies and goods, they sealed the entrance to the cave with the body remaining in it, and then returned home.

The Legendary Figure

An important and distinct category of stories consists of those that relate the origin of a medicine society or the medicine (i.e., power) of an individual, either a prominent doctor or a successful warrior. Characteristically, these stories recount how a young man was blessed with supernatural abilities by an animal or, less frequently, another agent. Sometimes the power was for good fortune in war or hunting; sometimes it was for success in doctoring—to heal, to mesmerize, and to perform legerdemain. Within this genre in Arikara and Pawnee folklore, a not uncommon source of power, other than an animal or occasionally a celestial object, was a scalped man who had previously been blessed himself by some supernatural agency. Thus, this category of stories differs from the preceding one in that the scalped man bestows power on a recipient, enabling that person to perform his own marvels, rather than simply supplying the individual with gifts that he, the scalped man, has obtained through the power originally conferred on him.

Attributing doctoring power to a scalped man was especially common among the Pawnee. In one story (Dorsey, 1904b:203–205), a woman who had just quarrelled with her husband went outside the village and was lured by a scalped man to his cave. He forced her to remain with him; and after a year she had a child by him. After they lived together for several more years, she finally determined she would return home. One day when the scalped man was off looking for clothing for the child, the woman put her son on her back, took one of the warrior's bundles that the scalped man had stolen, and left. After she had returned to the village, the scalped man came there one night to get his son. While he was attempting to obtain the boy, the child died; and after the body was laid at the edge of the village, the father took it.

For many years nothing was heard of the scalped man; but one day a young man came to the village, and his mother knew it was her son. He had been reared by his father, the scalped man; and now, after he returned, he entered the Doctors' Lodge, where he sang his song while he performed sleight-of-hand. He performed many marvelous acts, and finally became one of the leading doctors, taking the name Holy Man. Later, he left the village for a long time. When he returned, there was much sickness among the people, and he was able to cure several persons whom the doctors had been unable to treat successfully. His reputation grew; but finally, when he led a group of warriors on the warpath, he never returned.

The bestowal of doctoring and war powers, as well as the power to perform ventriloquism, is related in another Pawnee *kicahúruksu'* story (Dorsey, 1906:390–394). In it a Pawnee war party, after having successfully raided a Comanche village and having captured many horses, reorganized as soon as it returned home. The second expedition, however, did not enjoy the same good fortune as the first: the enemy surrounded the raiders and killed and wounded many Pawnees. After the survivors fled and were en route home, one man, who had been wounded in the leg, was unable to keep up with the others; so his companions left him with provisions and continued home. Shortly after the party was gone, the man heard many voices; and then someone called out that he had made the noises only to frighten the man. The wounded warrior saw no one, however. Over a period of several days, the same routine occurred, until finally there appeared a scalped man who said he was responsible for the voices and offered to take the man to his cave, where he would heal his wounds.

After the warrior was settled in the cave, the scalped man would leave every day. While he was gone, the warrior would hear the voices of many different people, including those of his family. Then the scalped man would reappear laughing. At last, this *kicahúruksu'* said he would give the wounded man the power to make the voices of many different people. After instructing him in the art, the scalped man taught him sleight-of-hand and then healed his leg. Finally he gave the man his remaining powers: by cov-

ering his body with white clay and putting a white downy eagle feather in his hair, the man could travel like a spirit, running as fast as the wind; and by breaking pieces of wild sage and carrying them with him, the pieces would turn into arrows during battle.

Later, when the man returned home, the doctors were meeting in the Doctors' Lodge, performing the sleight-of-hand taught them by various animals. The warrior who had been blessed by the scalped man entered and performed his newly learned marvels. His feats surprised the doctors and spectators, who now thought he was endowed with power. While the Doctors' Lodge ceremony was still in progress, the enemy, among whom was an invincible warrior, attacked the Pawnee village. When it appeared that the Pawnees would be overcome, the man with the scalped man's medicine left the lodge and used his powers: as fast as the wind, he charged into the enemy and killed many warriors, including the seemingly invincible one. Subsequently, he became a noted doctor and warrior who lived for a long time. Finally, though, when something told him that his benefactor, the scalped man, had died, he himself no longer wished to live and so committed suicide.

Another Pawnee story, which is recorded in truncated form (Dorsey, 1904b:210–212), accounts for certain features of the Buffalo-Doctors' Lodge: why it contained a buffalo-skull altar; why its doctors daubed their heads with white clay, so that their hair appeared as if they had been scalped; and why they offered smoke to a being who dwelt in the south, a being seen by the man who maintained the lodge.

One day this man was going along the Republican River and saw a buffalo that suddenly turned into a man. The appearance of the buffalo and its transformation occurred over several days, and the man finally decided to follow it. The buffalo led him to a cave, in which there was a buffalo-skull altar. While the man prayed to the skull, a scalped man came up to him. The man told him that he had belonged to the buffalo, a statement which derives from the Pawnee belief that every child (through the medium of one of its parents), while still in the mother's womb, is brought under the power of an animal. Later in his life, the doctors are able to identify which animal is his guardian by his actions when he is ill. In this story, the scalped man is referring to the buffalo as having been his guardian while he was alive, and after being scalped he had stayed with a buffalo, which had given him certain powers and this skull for an altar. Now, the scalped man said he would teach this man his secrets: how to doctor and how to have success in war. After learning these things, the man returned home and sponsored a Buffalo-Doctors' Lodge dance, during the performance of which he demonstrated great power. The participants, following his lead, offered smoke to the buffalo skull on the altar and to the scalped man who dwelt in the south. Several days after the dance, the participants formed into four war parties, each of which went in a different direction. Soon they all returned with numerous horses, and consequently attributed their successes to the power given by the scalped man.

A final illustration of this set of stories is an Arikara version of a similar Pawnee tale (Weltfish, 1937:238–240). In this story a lost hunter was accosted by seven *tshunúxu'*, each of whom was deformed in a different way. One had no ear, another no nose, another no leg, etc., and each was named according to his missing body part. When they went off, the hunter followed them to their cave, where they were expecting him. The leader told him that they had been killed in a battle, but Night had revived and blessed them with certain powers. He told the hunter that nothing was difficult for them except obtaining tobacco, which both the spirits and gods like to smoke. Since they were unable to obtain it themselves, they always asked humans for it as a gift offering. If the hunter would provide them with tobacco, they would teach him their powers: to use certain medicines to heal and to know the ways of the warpath and hunting. The scalped men then taught him their mysteries and medicine songs. Later, after forbidding him to reveal

their identity to anyone, they sent him home for tobacco. He returned with it and satisfied them. Afterwards, he became noted as a great warrior and doctor and lived to an old age.

The Mythological Figure

Farthest removed from the recent past is the mythological period, an age which precedes the historical past. It is a time when the gods, supernatural beings, and animals were the principal actors in dramas that explain the origin and order of the present world, a time before the primary actors were humans who were concerned with secular affairs.

One example of the two myths presented at the outset of this paper (p. 47) is the story that explains the origin of summer in the Northern Plains. In that story most of the actors are animals, as indeed they always are in the same myth where it occurs elsewhere. In the Arikara version, however, Scalped Man is a character integrated into the animal cast and treated as a figure belonging to that period.

The other example is a Pawnee myth (Dorsey, 1904a:74–78) that is placed early in human history and explains why death continues to prevail upon earth. A cosmological story, it portrays scalped men as intermediaries between the celestial gods and people on earth; and, in fact, the leader of the scalped men is said to be a god himself.

In the story a man lost both his wife and son, and in his bereavement he wandered through the country in quest of death. While he was in a timbered area, he encountered a group of scalped men whom he followed into their cave. He told the scalped men of his losses and that he would like to remain with them rather than live with humans anymore. The leader responded that they could not allow him to stay. They themselves should have gone to the Spirit Land, he told the man, but Tirawahat had released their spirits so that they could return to their people the warrior bundle that hung in the cave. Now they wanted to teach this man the ceremony of the bundle, and then he could take it and its ritual back among the people. The man, however, refused, saying that he preferred to die so that he might see his son. Moved by the man's wishes, the leader, who was now himself a god, said that he would take the man's request to the gods in the west. When he returned, he told the man that Tirawahat had consented to allow the dead to return to earth to see the living. The man was to go back to his people and bring them to a camp nearby. There the dead would come, too, and dead and living would be reunited for four days. The man could, he was told, touch his son, but he could not speak to him. At the meeting the bundle and its ceremony would also be given back to the people, and those dead spirits who wished to remain on earth might do so.

When the meeting occurred the man not only embraced his son but spoke to him as well, in spite of the admonition. As soon as he spoke, all of the spirits disappeared, and the man was left broken-hearted. The people, who received the bundle, returned home; but the man continued to wander, never to be with people again, for he had been responsible for death remaining on earth.

The Comic Character

In contrast to the sets of tales just presented, all of which are serious by nature and reputedly true, there are humorous stories—fictional in character and told purely for amusement—in which Scalped Man also appears.

In one group of these stories, Scalped Man himself is the protagonist. Here he is portrayed simply as a fleeting, or filmy, character who is a trickster. The Pawnee story of Scalped Man and the Two Couples (Parks, 1977:79–81) illustrates this type. In it two couples, who have been out hunting, decide to return home. They are coming back, and just before crossing the Platte River they hear someone calling out, "Huu, huu!" One of the men then instructs the two women to lie on their backs, with arms and legs spread out, on the east side of the trail, while the two men are to

lie on their stomachs on the west side. No sooner do they position themselves thus than Scalped Man appears. "Oh my," he observes, "there are people lying here! They must have died long ago." Then he went to one of the men, lifted up his breechcloth, and spread the man's cheeks. "Oh," he commented, "they must have shot him here." Then Scalped Man went to one of the women, whom he also inspected. "Oh, they must have died *long* ago," he said as he passed his hand over her vulva, noting she was unclean. "*Long* ago they must have died!" At this comment the two men angrily arose, but Scalped Man, the scoundrel, ran off and disappeared into the timber.

Scalped Man appears, as well, in Coyote stories. In one illustrative tale it is Scalped Woman, however, rather than Scalped Man, who is the character juxtaposed with Coyote (Dorsey, 1906:428–429). Coyote came upon Scalped Woman and began to taunt her about the matter running off her head, although he in fact was anxious to take her sexually. When he continued to tease her, Scalped Woman chased after him, trying to kill him. Coyote bounded out of sight and then changed himself into a little old man whom Scalped Woman approached for information on Coyote's whereabouts. After Coyote fooled her for a while, he taunted her again, and the entire episode repeated itself several times, until Coyote managed to trap Scalped Woman in a hole, where she became stuck. There he was able to satisfy his lust. Afterwards, Scalped Woman lived with him as his wife for several years; then Coyote tired of her and went off to hunt, never to return.

The Bogeyman

There is, finally, one other manifestation of the scalped man figure besides the character portrayed in specific stories. It was a manifestation expressed in two different roles and was based on the popular belief that these beings were bogeymen. Although in tales he frequently is a benefactor and source of mystical power that can be used for beneficial ends, he was popularly envisioned as a malevolent spirit. He was, after all, no longer human and was doomed to a solitary life dwelling in caves, moving about during the night, and stealing what he needed. As illustrated in the anecdotes above, he reputedly would steal women and children; and so people feared this being who haunted dark, isolated areas.

Perceived thus, the scalped man quite naturally played the role of a bogeyman and was used by both Arikara and Pawnee adults to make their children behave. Should a child misbehave at night, a parent threatened to put him outside the lodge and call a scalped man to come get him. To give reinforced credulity to this threat, the Arikara told a story about one boy who had been put outside on a cold winter night. After the scalped man was summoned, the parents closed the door of the lodge; and later when they went out to bring the child inside, he was gone and never seen again. This threat, then, was not to be taken lightly.

The other role of the scalped man as a sort of bogeyman was displayed among the Pawnee in the Dance of the Scalped Ones. (See Weltfish, 1965:356–358, 370–372, for a detailed account of this dance.) It was performed when the annual Doctors' Lodge convened in late summer for the doctors' twenty-day ceremony, an extended series of performances designed to demonstrate the powers of the established, leading doctors of the band. Among the scheduled performances, the Dance of the Scalped Ones occurred several times over the twenty-day period. It was different from all the other dances, in which animals were always impersonated, for in this mime the actors were the spirits of persons who had been scalped by the enemy.

The dance was performed outdoors at night, and everything surrounding it was done to create a mood of weirdness. First, the two drummers ran out from the Doctors' Lodge and sat facing each other. Then as they began to beat their drums in all sorts of irregular beats, the *kicahúruksu'* emerged running from the lodge. Their bodies were plastered all over with mud, and on their heads and faces there were thicker coats, so that

as the actors approached they appeared as a mud bank. The song for the dance was sung to an irregular tune, and the dancing itself consisted of erratic motioning and jumps in every direction, all designed to promote a scary effect. At the end of the song both dancers and drummers ran back into the lodge. Then the same performance was repeated three more times. On the fourth and last round, however, the actors came out of the lodge dancing backwards. Near the end of the performance dancers and drummers fell to the ground. At last they looked up dazedly; and when they noticed the people around them, they jumped up and ran back into the lodge.

After most dance performances among the Pawnee, the dancers were given a meal by one or more donors. But the actors in the Dance of the Scalped Ones were an exception. Since the *kica-húruksu'* were known to be thieves who would steal anything, given the chance, they were fortunate to receive whatever donations of corn had been made to them and were expected to provide for themselves whatever dried meat they could steal.

Summary Remarks

From the preceding discussion of the various roles of the scalped man in Arikara and Pawnee folklore, it is apparent that cultural attitudes toward this figure were ambivalent. He was, at one extreme, a malevolent spirit who stole human possessions, as well as women and children. He had mysterious powers and lurked in dark, remote terrain. Therefore, he was an object of fear, a being who was capable of performing evil. At the same time, as a large number of stories attest, he was both capable of and willing to bestow power on a fellow tribesman to enable that individual to doctor the sick or wounded and to achieve personal success in war and hunting. At the other extreme, then, the scalped man was a source of good fortune who pitied men and "blessed" them. Thus in these cultures he was like the doctor, an animal, or any other object or being endowed with miraculous powers: *tiwa:rúxti'* (Pawnee *tiwa:ruksti'*) 'he was holy', and consequently he was a source of both good and evil.

These attitudes derived from the popular belief that the scalped man had been killed and scalped, and that later he had been resuscitated by a mysterious being, sometimes (as discussed above) by Night, other times by Wind, an animal, or some other agent. The scalped man was, then, in a transformed state, no longer human, and destined to live in the opaque world of spirits.

Several stories and anecdotes, however, suggest that some scalped men were not viewed in quite this light, that they were seen simply as unfortunate individuals who had been disfigured and were unable to return to their tribe because of the fear of social ridicule. Shame forced them to accept their solitary existence, and no amount of persuasion would induce them to return home. Thus, the scalped man was also a truly historical, or real, character in the folklore, as well as the spirit being and legendary figure.

What this paper has shown is that the scalped man, who, of course, was originally a real individual, has permeated Arikara and Pawnee folklore, continuing as an historical character but evolving into an important legendary figure who ultimately was intruding into the mythological realm. On the basis of only two recorded myths, both presented above, it can be seen that the scalped man was not yet a truly mythological figure integrated into that period and genre: he was merely a legendary figure who had crossed over into that realm and had become associated with mythical characters. However, in the Pawnee myth that explains why death continues on earth, the scalped men are treated as gods, or at least as demigods who are intermediaries with the celestial gods. Consequently, it seems reasonable to conclude that had Pawnee and Arikara folklore continued to develop independent of the cultural disruption caused by the advance of Western culture, the scalped man would have continued his apparent evolution into a fully developed mythological figure.

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Political Assimilation on the Blackfoot Indian Reservation, 1887–1934: A Study in Survival

Thomas R. Wessel

ABSTRACT

The life of Robert Hamilton, Sr., reflects many of the sociopolitical changes that occurred on the Blackfoot Reservation between 1887 and 1934.

On 27 March 1934, the Superintendent of the Blackfoot Indian Reservation of Montana, Forrest Stone, wrote the Commissioner of Indian Affairs seeking aid for Robert Hamilton, Jr., a young man suffering from tuberculosis. Stone justified the request by reminding the Commissioner that "the father of this boy perhaps did as much or more for the Blackfeet tribe of Indians than any one single individual in the history of the tribe." Robert J. Hamilton, Sr., had not always received such praise from the officials of the Office of Indian Affairs. During his lifetime the government had fired him as a tribal interpreter, arrested him for horse-stealing, jailed him as a radical agitator, and had found him generally an obstruction to the smooth advance of the Blackfeet toward civilization (National Archives (NA), 1934).

Robert J. Hamilton, Sr., personified a transitional generation on the Blackfoot Reservation (Figure 7). The generation of Blackfeet that reached maturity at the turn of the century was the last generation of Native Americans who had direct contact with the traditional life of a mounted hunting culture. They had not, however, reached an age that allowed them to seek their place in the tribe by traditional means before the old way of life ended. In the twentieth century, members of Hamilton's generation sought personal advancement and the retention of a society that recognized their claims to leadership. In the process, Hamilton and men like him were instrumental in transforming a tribal society, organized around personal relationships and meritorious leaders, into a political community, bound by shared political interests that commanded loyalties to new symbols and identified leadership with status.

Born in the 1870s on the northwestern plains of Montana, Hamilton's lifetime spanned one of the most trying periods in Indian history. Like most Northern Plains tribes, the Blackfeet in the late nineteenth century were a loose amalgamation of hunting bands that spent most of the year in separate camps. The hunting bands were organized to take best advantage of the Plains environment. They remained small enough to feed themselves from the buffalo hunt, but large enough to afford protection from enemies. The existence of several such bands provided for individuals an alternative that relieved tension. Dissatisfaction with a band's leadership or discontent with the success of a hunt permitted members to abandon one group for another. It was a dynamic system characterized by a constant grouping and regrouping of families and kin.

Band leadership was based on individual merit gained through skill as a hunter, courage in war,

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FIGURE 7.—Robert J. Hamilton, Sr., February 1916, Washington, D.C. (BAE neg. 411 Blackfeet, Smithsonian Institution, National Anthropological Archives, Bureau of American Ethnology Collection)

and daring on horse-stealing raids, as well as a display of generosity toward the less successful. No leader held real power over the members of the band. Social control was a function of the entire society. Ridicule and ostracism functioned as a principal means of maintaining order. A leader retained his position only so long as he displayed those characteristics that had propelled him to leadership and so long as he correctly read the temper of the band. A headman who thwarted the desires of his followers would soon find himself without anyone to lead. It was an efficient fluid society well suited to the Plains environment of the mid-nineteenth century.

In the 1880s, when Robert Hamilton was in his early teens, the age when a Blackfoot boy entered manhood, the buffalo days came to a sudden end. In 1882, the Blackfeet had made a successful hunt. In 1883, the hunt had been very poor. In 1884, the Blackfeet found no buffalo and endured a two-year starving time when as many as 25 percent of the tribe died of malnutrition and associated diseases. Dependent on the largess of the federal government for bare subsistence, the bands huddled near the government agency in shock and despair (FRC, 1883; Ewers, 1958:290–294; McFee, 1972).

An erosion of traditional tribal society began almost at once. The reservation agent's control over food supplies struck at the heart of Blackfoot pride and independence. Further, the relationship of traditional leaders to the federal establishment altered their position in the tribe. Rivalries between band leaders, such as Three Suns who sought to retain the old way of life and the more accommodating White Calf, created social divisions never completely healed. Although the Blackfeet had organized a kind of police force and established a law code under the direction of Agent John Wood as early as 1878, the system had supplemented rather than replaced traditional methods of social control. After 1885, federal Indian agents used the older leaders as a means of enforcing order on the reservation. The elders presided over the distribution of rations and acted as judges meting out punishment for infractions of reservation rules. With the establishment of courts and judges, social control became institutionalized and divorced from the participation of tribal membership. Individual discipline that in the past could be lax except at critical times of the hunt or war no longer was tolerated. Leadership, rather than identifying merit became frozen without a method of identification for the future (Ewers, 1958:273–274; Hagan, 1966).

As tribal elders, such as Three Suns, died, the reservation agent appointed replacements generally from among close relatives of the deceased, introducing a hereditary bias to tribal leadership. By the turn of the century a number of men whose only claim to leadership was the status of the position they occupied dominated the tribal council. Absence of traditional means of achievement closed avenues of leadership for most of Hamilton's generation. So long as some of the traditional leaders, such as White Calf, remained on the tribal council the appointed members possessed a certain amount of immunity. With the death of White Calf in 1903, the last of the active band leaders, a council that defined leadership by status rather than merit became vulnerable. Men of Hamilton's generation moved to challenge the hereditary council and in the process constructed a foundation for the preservation of the Blackfoot community.

Hamilton worked for the next thirty years to fill the leadership void left by White Calf and the old band leaders. Unable to achieve leadership by traditional means, Hamilton perceived the change from a meritorious to a status society that was already underway on the reservation. He sought a new premise for determining leadership that brought him to adopt Anglo political methods in an effort to become identified as a spokesman for Blackfoot interests and to attract a constituency. With status alone as the measure of leadership, Hamilton saw no reason why he could not assert his own claim, and he persistently strove to restore a measure of autonomy for the Blackfeet and to forge a modern economy on the reservation. His adaptiveness often appeared opportunistic, although his expediency was more often than not designed to achieve a larger goal

of Blackfoot self-determination. At times his actions advanced his own personal fortunes as much as the collective welfare of the submerged tribe. Doubtless, in his own mind the two objectives were one.

Although Hamilton accommodated his own identity to meet the changing demographic nature of the reservation, he rarely sublimated himself to the whims of the White world. His behavior, often erratic and inexplicable, was consistently assertive in so far as encouraging political activism among the Blackfeet. Hamilton's actions frequently brought federal reprisals. While the federal government through its reservation agents sought the destruction of Blackfoot culture and tribal society, the establishment of a Jeffersonian yoeman economy, and the political docility of the Blackfeet, Hamilton defended the tribe's cultural heritage while attempting to accommodate to twentieth-century economic realities. More importantly, he tried to weld the Blackfeet together with a new sense of community based on shared political aspiration as well as pride in a common ethnic heritage. That he did not and possibly could not find a mechanism to fulfill his aim of preserving the past while living in a radically altered present did not diminish the substantial character of his achievement.

Details of Hamilton's early life are uncertain. He was probably of mixed blood parentage, although that is not well established. In 1902 Hamilton claimed to be a full blood Indian, whose parents had died in his infancy. A.B. Hamilton, a local trader, adopted him, changed his name from Bobtail to Robert, and gave him his own surname. In 1920, however, Hamilton indicated that A.B. Hamilton was his natural father and that his Blackfoot mother died in childbirth. The confusion as to Hamilton's birth may provide some insight into his character. In the first two decades of the twentieth century Blackfoot demography changed dramatically. At the turn of the century the Blackfoot population was dominated by full bloods; by 1920 they constituted barely one-fourth of the enrolled membership. Although Hamilton may have simply been expedient, he more likely reacted under the stress of alienation felt by many of his generation who had neither a commitment to the old ways nor a firm perception of the future. Neither full blood by birth nor mixed blood by temperament, he strove to be both (Anonymous, 1902:1570; Stout, 1921: 1206; NA, 1915c).

Raised in the household of a White Indian-trader and educated at Carlisle Indian School where he graduated in 1896, Hamilton doubtless was confused about his own ethnic heritage. Consequently, in finding his place on the Blackfoot Reservation at the turn of the century he appealed to emotion rather than biology. The conflict in his own background propelled him to seek identification in the political arena rather than in a society still clinging to a way of life that could not survive.

Returning to the reservation after his graduation, Hamilton began a conventional career for a young man with a prominent local sponsor. He married a full blood Blackfoot girl in 1898 and took a job as a clerk in the store of another trader, E.T. Broadwater. While working in the Broadwater store he also acted as an interpreter for the reservation agent. That experience may have first turned him to political activism. Certainly for the first time it brought him into close contact with his people and gave him a unique vantage point from which to observe the nearly complete control that reservation agents then exercised. Hamilton also discovered that he enjoyed being at the center of power.

Hamilton's tenure as tribal interpreter was short-lived. He used his position to convince the agent of the need for a building to house a Blackfoot literary society where young men of his age could learn English and read American literature. Agent Thomas Fuller applauded the idea and soon gave his permission, only to learn that the building was a gathering place for training young men in the Sun Dance and for older men to pass down oral traditions. Hamilton had not been entirely deceitful. He intended to combine instruction in English with the preservation of Blackfoot traditions, which he wished to learn himself. He also used the occasion to rally support against an appointed tribal council. In any event,

the incident led to his firing as an interpreter, but it also marked him as a spokesman for the Blackfeet (Federal Records Center (FRC), 1898).

White Calf in death gave Hamilton an opportunity to assert his claim to leadership. Along with several other tribal members, Hamilton requested a meeting room from newly arrived Agent James Monteath shortly after the chief died. Monteath obliged but was appalled when the assembled Blackfeet announced that they were the newly elected Blackfoot Council and informed the agent that they were ready to take over much of the administrative duties of the agency office. The outraged agent refused to recognize any such election and insisted that the council remain an appointed body that would meet only at his call. Most agents probably would have preferred to do without a tribal council at all, but legal requirements of tribal approval of grazing leases on the reservation necessitated the existence of some such organization. An elected council, however, was more than the agent and some Blackfeet would tolerate (Monteath, 1903a).

Agent Monteath prevailed, but his strong denunciation of the action and particularly of Hamilton tended to increase his adversary's visibility. Over the next two years, Hamilton used every opportunity to challenge the tribal council. He attended every meeting questioning the council's right to conduct Blackfoot business. He denounced a government program that resulted in cutting the ration roll on the reservation and protested a plan by Agent Monteath to separate the full-blooded members of the tribe and place them in a subsistence farming program isolated from the centers of the Blackfoot population.

In 1905, an exasperated Agent Monteath tried to silence his outspoken critic by having Hamilton arrested for horse stealing. That year Hamilton's foster father, A.B. Hamilton, died. Hamilton took possession of the older Hamilton's horses. Other members of the tribe and some White traders made a claim for the horses; since Hamilton had nothing to prove his own right to the animals, Agent Monteath saw an opportunity to confine his adversary in the agency jail. No trial was ever held over the incident, and many Blackfeet were ready to believe that Hamilton was in jail for his political activity rather than for a dispute over the ownership of some horses. Ironically, the horse-stealing charge probably enhanced Hamilton's standing among the full-bloods. Particularly among the older members of the tribe, horse stealing kindled fond memories of a happier day. In any event, after sitting in the reservation jail for a few weeks, Hamilton was released after the charges were dropped. (NA, 1902a; 1915c).

Possibly fearing for his safety, Hamilton left the reservation for the next two years to work in the law office of a former agent, Mark Baldwin. Congressional passage of an allotment act for the Blackfeet in 1907 brought him home. Once again he took up the cause of an elected council, pointing out that allotment endangered the very existence of the tribe. He insisted that an unrepresentative council could not be expected to protect Blackfoot interests. His persistent challenge to the authority of the council and the reservation agent led to his jailing once again. In 1910, another new agent, C.H. Churchill, without pretense for his action, made allegations of criminal activity against Hamilton and declared him a menace to Blackfoot social order. Churchill later suggested that Hamilton's efforts to gain enrollment for absentee Blackfeet, for which he charged a fee, had prompted the agent's action. Whatever the reason, Hamilton remained in the reservation jail until the arrival of still another federal official several months later.

Superintendent Arthur McFatridge, the first nonpatronage appointee on the Blackfoot Reservation, released Hamilton from confinement. McFatridge's appointment resulted from efforts to remove reservation agents from the patronage system. Past proposals to cover agents under Civil Service regulations failed to gain Congressional approval. Beginning in 1906, President Theodore Roosevelt introduced the expedient of not appointing agents to Indian reservations; instead he placed the reservations under the authority of government school superintendents who were subject to Civil Service selection. Superintendents were generally highly critical of their political predecessors and made some effort to ingratiate

themselves with the tribe. Finding the new government official in a cooperative spirit, Hamilton solicited his support for an elected tribal council. McFatridge refused to endorse an elected council, but was willing to employ a device becoming common on other reservations. He agreed to the election of a "business committee" to deal with the specific questions of tribal enrollment and the approval of leasing arrangements on the reservation. The business committee on most reservations was usually a small body of five or ten tribal members. With allotment well underway on many reservations, including the Blackfoot, a smaller business committee seemed more efficient than calling together the tribal council of 40 to 50 members or as on some reservations, the entire adult male population. Accordingly, the larger tribal council was assembled primarily for major issues, such as informing the Blackfeet of changes in government policy (FRC, 1912).

Hamilton had little difficulty getting himself elected to the business committee, thanks to his earlier efforts to identify himself as a Blackfoot spokesman. He quickly dominated the business committee and pushed it to consider all questions of interest to the Blackfeet. He used the meetings as a forum to discuss the administration of the Blackfoot cattle industry and to resurrect a long-standing Blackfoot claim for compensation for land lost in the nineteenth century. When questioned about the committee's authority to deal with such matters, he replied that it was simply providing advisory recommendations (FRC, 1910; NA, 1970).

Over the next several years, Hamilton continued to expand the business committee's agenda. He used the committee as a forum to turn the Blackfeet from a fragmented tribe, frequently at war with itself, to an issue oriented, politically minded community. He saw the business committee as a place to resolve Blackfoot differences and as a symbol to attract Blackfoot loyalty. Membership on the committee also gave him a cloak of legitimacy to pursue Blackfoot interests outside the normal channels through the Office of Indian Affairs. On six occasions between 1912 and 1919, Hamilton travelled to Washington, D.C., where he established contact with sympathetic Congressmen and eastern philanthropists (FRC, 1914; NA, 1917a).

Typical of his activities was his testimony before a Senate committee in 1914 alleging that 149 Blackfeet had starved on the reservation the previous winter. The charges, to say the least, were exaggerated. Many of those listed had died of natural causes unrelated to malnutrition, while over half were still alive ten years later. The allegations, however, sufficiently impressed Senator Mark Lane of Oregon, who repeated them on the Senate floor. Hamilton in later years was not above quoting his own charges from the *Congressional Record* as the authority for his claim. Nevertheless, Hamilton succeeded in drawing attention to what were undeniably deplorable conditions on the reservation. A subsequent investigation failed to sustain allegations of starvation among the Blackfeet, but it did, for unrelated reasons, lead to the removal of Superintendent McFatridge. Hamilton's initiative in prompting the investigation left the impression among the Blackfeet that he exercised real power, even to the extent of removing a superintendent. He quickly took advantage of that impression to further escalate the business committee's activities (NA, 1915c; 1922b).

A recurrent issue on the reservation involved a claim arising from land the Blackfeet lost in 1874. That year, through a Presidential order, a large section of the reservation was opened to White settlement. The Blackfeet never received payment for the land lost; at the time, however, they had given the loss little notice, since they had ceased using the area as a hunting ground. From time to time over the next several decades the Blackfeet requested that the Office of Indian Affairs press their claim in Washington, but to no avail. Hamilton made it a central theme of the business committee. The issue appealed to all elements of the tribe and furthered his own career as a tribal leader. In 1919, he gained permission to hire a Washington, D.C., law firm to obtain Congressional sanction for a suit before the U.S. Court of Claims. Five years later, Congress passed the necessary sanction enabling legislation. Finally

after years of litigation and three years after Hamilton's death in 1932, the Court of Claims sustained the Blackfoot claim (NA, 1920a; 1936a).

Until 1919, Hamilton and the business committee devoted most of their energies toward attempting to preserve all of the Blackfoot Reservation for the benefit of the Blackfoot people. In 1907, Congress passed an allotment act for the Blackfeet. It was a common practice for Congress to pass special allotment acts taking into consideration the particular conditions of the reservation and requiring only general adherence to the General Allotment Act of 1887. Under the terms of the 1907 Act each Blackfoot tribal member enrolled before 30 June 1911 was to select an allotment of 320 acres, either all in grazing land or divided between 280 acres of grazing land and 40 acres of irrigated land. Any land remaining after allotment was to be classified and opened by Presidential proclamation to settlement under the various entry laws of the United States. On the Blackfoot Reservation nearly one-half of the land was potentially available for entry after allotment.

For various technical reasons the Office of Indian Affairs did not submit the Blackfoot allotment schedule for approval by the Secretary of the Interior until 1917. During the preceding five years, Hamilton had worked assiduously to change the nature of the allotments and to keep the "surplus" land from entry. On one occasion he completely defied his own business committee when a majority had been persuaded to support Montana Senator Thomas Walsh's bill allowing early entry on a portion of the surplus land. Hamilton had gone to Washington as part of a delegation committed to supporting the bill but testified against it instead. It was a measure of his confidence that he thought he could reverse his instructions and still retain his position on the business committee. His judgment proved accurate. The disclosure that part of the reservation might contain oil and gas soon brought the business committee around to Hamilton's position.

The possibility of mineral wealth on the reservation also suggested a means of preserving the tribal government and retarding the intent of the 1907 Blackfoot Allotment Act, which did not provide for the disposal of mineral land apart from general allotment (34 Stat. 1015; NA, 1916c; 1919c). The question arose whether minerals found beneath land already selected could be preserved to the tribe before the selections were approved. Additionally, a decision became necessary as to the disposition of potential mineral wealth beneath land not allotted. Hamilton seized upon the possibility that oil existed on the reservation and demanded that all mineral rights on the reservation remain a tribal asset. With a tribal asset of undetermined duration the perpetuation of tribal governments was assured for the immediate future (NA, 1917b).

Hamilton attacked the problem on two fronts. Without authority, he invited Standard Oil of New Jersey and other companies to negotiate leases on the reservation. The specific terms of Hamilton's proposal to the companies is unknown, but their positive response became ammunition in his lobbying effort with the Indian office and Congress. Between 1915 and 1917, Congress considered several bills to alter the rights of individual Blackfeet to the minerals underlying their selections. None of the proposals received Congressional approval, and in 1917 the Department of the Interior approved the Blackfeet Allotment Schedule with mineral rights vested in the individual. The debate, however, inclined Congress to reconsider the disposition of surplus reservation land. Hamilton and the business committee had petitioned the Office of Indian Affairs and the Congress to add "too late babies" to the enrollment list and make them eligible for allotments. Congress had passed such second round allotment acts before and generally agreed to such requests. The Indian Office, however, usually resisted such efforts, preferring to keep a complicated process as simple as possible. In 1919, with the evidence of oil and gas deposits on the reservation mounting, Congress passed a second allotment act ordering allotments for Blackfeet born after 1 July 1911, but reserving subsoil rights to the tribe. While such an act did not guarantee the future of the tribe, it acted to delay the time

when Congress might order the termination of Blackfeet local government (H.R. 1916, S, 1914; S, 1917; S, 1918; NA 1916b; 41 Stat. 3).

Hamilton's success in helping obtain a second round of allotments for the Blackfeet was tempered by a personal set-back in 1919. Hamilton's prominence on the reservation and the legal background he acquired while working with Mark Baldwin had, years before, led to his appointment as a United States commissioner. The appointment lasted but one year, when it was discovered that Hamilton was accepting fees for his work. United States commissioners were salaried officials. Although Hamilton's fees were illegal, it was apparently done without fraudulent intent. He had never drawn his salary as commissioner and apparently thought his income from the office was derived from fees similar to the system used for clerks in federal courts. In 1919, a jury found him innocent of wrong doing, but he lost his position as commissioner (FRC, 1919).

Far more detrimental to the well-being of the Blackfeet was the consequence of the European war and postwar economic dislocation on the reservation's cattle industry. Authorities had long recognized that the Blackfoot Reservation was primarily suited to cattle and sheep grazing. The Allotment Act of 1907 had recognized the reservation's limitations for crop agriculture when alloting the principal part of it for grazing. Since the mid-1890s the federal government, using Blackfoot funds acquired from land sales, distributed cattle to adult tribal members. By 1910, the Blackfoot cattle herds through further distributions and natural increase were large enough to predict a reasonable level of success for the enterprise. A series of drought years and severe winters between 1900 and 1908 retarded the development of the industry, but sufficient stock remained to ensure recovery. The development of irrigated hay fields appeared to solve the problem of winter feed.

The government cattle program, however, had the effect of enriching a few Blackfeet while most languished. Full-blood members of the tribe continued to take more pride in their horse herds than in cattle. Mixed bloods found it relatively easy to barter Indian ponies for cattle. Consequently, Blackfoot cattle tended to end up in the hands of a few aggressive entrepreneurs. As early as 1902, only 47 Blackfeet had substantial cattle herds. The Office of Indian Affairs was aware of the monopolizing process on the reservation and acted to reverse the trend (NA, 1903).

The cattle question on the Blackfoot Reservation placed the government in a dilemma. The government tried to foster both the tribe's collective economic advancement and self-enterprise among individual members. The more ambitious, however, by their very aggressiveness, tended to defeat the government's effort to raise the general level of economic self-sufficiency. In a sense, the government was too successful in introducing capitalism to the Blackfeet, and it never solved the problem of reconciling an economic system based on creating winners and losers with a commitment to preventing losses. The reality that not every Blackfoot tribal member could be a successful entrepreneur did not mesh with government programs. Furthermore, intervention ensured discontent from every faction on the reservation.

The problem was further compounded by increasing pressure on the Office of Indian Affairs to establish grazing leases for outside cattlemen. Nearby ranchers had already found they could make individual arrangements with Blackfoot tribal members and bring their cattle onto the reservation. A grazing lease system was required to bring the problem of trespass cattle under control. Until the Blackfeet enlarged their cattle herds sufficiently to use the entire reservation, leasing to outside cattlemen appeared a reasonable method to increase Blackfoot income. At the same time the government was reluctant to tie up large amounts of reservation land in leases that might soon be allotted. Consequently, the government instituted a "permit system" on the reservation rather than a lease system. The permit system had the added advantage from the agent's point of view of not requiring approval from the tribal council.

Although the permit system had been instituted while Hamilton was away from the reser-

vation and before the establishment of a business committee, it became a central issue in his campaign to secure more authority for the tribe over its own future. Objections to the permit system also gained Hamilton support from both full bloods and mixed bloods. The permit system established a fee of $1.00 a head for a fixed number of cattle to range without restriction on the Blackfoot Reservation. For the Blackfeet the government imposed the same fee for number of cattle in excess of one hundred head. Mixed bloods with large cattle herds protested paying any fee. Full bloods were equally resentful since the fee restricted their ability to trade cattle for horses. What the government had viewed as an insidious process of monopolization was viewed quite differently by the Blackfeet. Full bloods took little umbrage with their mixed blood relatives' penchant for acquiring cattle so long as it allowed them to continue a life-style they cherished above the ownership of beef cattle. Hamilton understood the full blood's attachment to an older pace of life and resented the government's interference (NA, 1902b, 1904a, 1904b; 1904c).

With little ability to monitor the system, the government program had little practical effect. Full bloods and mixed bloods simply evaded the regulations. Later, in 1908, the Office of Indian Affairs modified the permit system charging a fee to the Blackfeet only for cattle that were not part of the government's distribution program. Cattle carrying the Interior Department ID brand were not charged, while "straight" cattle were charged a fee for any number. The new program encouraged Blackfeet with large herds to brand all of their cattle with the ID brand, thus escaping the fee. Branding cattle with the ID brand, however, also reduced their ability to sell the cattle since ID cattle could be sold only with the agent's permission (FRC, 1908).

Hamilton had little difficulty organizing general resistance to the government's program and in uniting mixed bloods and full bloods in the effort. By 1915, the general evasion of the program forced the government to return to a leasing system. With World War I already in progress in Europe the market price for cattle increased, and the return of drought reduced the Blackfeet cattle industry to only a few thousand head. Pressure by the cattle owners on agents to approve cattle sales proved irresistable when prices went over $15.00 a hundredweight. Inevitably, the first to sell their cattle were the full bloods (NA, 1915a, 1915b, 1915c).

To meet the situation the government changed the cattle program once again. In 1915, with a modest beginning, the Office of Indian Affairs established a tribal cattle herd as a means of teaching the full bloods the skills of cattle raising and to provide them with a market for their hay. The program was no more successful than earlier efforts in agricultural training. Mixed-blood cattlemen protested that tribal resources were denied them because the tribal herd used the best grazing land. They demanded that the government distribute the herd on a per capita basis. Such a program nearly ensured that the cattle would ultimately become property of a few mixed bloods. Drought and the break in cattle prices after World War I ended the debate. By 1920 the government had sold the herd to reduce costs and the Blackfeet found themselves in their worst economic distress since the 1880s (NA, 1916a, 1919a, 1919b, 1920b).

The destruction of the Blackfoot cattle industry during the war and postwar years, coupled with the end of Blackfoot funds from earlier land sales, left most of the tribe destitute. Few had improved their allotments sufficiently to farm, and fewer had the resources to reestablish themselves in the cattle business. At its lowest point in forty years and a decade away from a time when income from mineral resources would partially alleviate conditions on the reservation, Fred C. Campbell arrived as the new superintendent. In Campbell, Hamilton faced his greatest challenge for tribal leadership (Wessel, 1979).

Campbell was an ambitious, imposing figure, who put his personal stamp on the reservation in the first months of his administration. He quickly gained an understanding of the reservation's problems. With the limited resources of the reservation, Campbell decided to concentrate building a subsistence level under the most destitute mem-

bers of the tribe, the full bloods. In the first weeks of his administration, he visited every family on the reservation, making notes of specific needs and the family's resources. Over the next few months he developed a program to encourage full bloods, and any mixed blood who would join him, to begin utilizing the allotments. His idea was to break the psychological depression that gripped the reservation and encourage full bloods to begin some modest efforts in farming. Campbell never said what he thought the result of his program was to be, but in design its success meant developing a series of subsistence farm communities. He further instilled a sense of pride in the full bloods by acquiescing in their desire to gather for summer ceremonials. He compromised with the full bloods and gained their agreement to move the Sun Dance to a part of the summer when it did not interfere with necessary farm work. His sensitivity to the Blackfeet's deeply felt need to maintain continuity with their past through practice of traditional ceremonials quickly endeared him to the full blood community. It also presented a significant challenge to Robert Hamilton and the business committee, which for all practical purposes by 1920 acted as the tribal council. Hamilton had worked, for the preceding decade, to create a sense of community on the reservation, with the business committee as the forum where individual differences could be compromised into tribal positions. Campbell's success, while laudable in the short run, endangered that development and appeared a step back toward reliance on the federal government (NA, 1921a, 1922a).

The conflict that developed between these two strong-willed individuals was probably inevitable. Hamilton's opposition to Campbell's plan, however, was not based entirely on competition for leadership, but a genuine concern for the future of the reservation. Campbell's program, if generally employed on the reservation, would have had the effect of perpetually isolating the local economy from the general agricultural economy of the region. He was not interested in developing commercial agriculture, but expended his energies on establishing diversified agriculture that looked toward self-sufficiency. It was an idea that had had some appeal in the frontier conditions of the nineteenth century, but could hardly anticipate economic advancement in the integrated national economy of the twentieth century.

Campbell's method of implementing his program was even more disturbing for Hamilton. The superintendent established a series of regional farm chapters on the reservation. The farm chapters organized the farming efforts of the full bloods and acted as cooperatives for equipment purchases. They also became local political clubs, where tribal members discussed general questions of reservation policy and arrived at decisions. Hamilton chafed under Campbell's domination of the farm chapters and the diminished role of the business committee (NA, 1922c, 1924a, 1924b).

Campbell had also moved to regularize the election of council members and established election districts along the same lines as the regional farm chapters. His influence with the farm chapters undoubtedly gave him some control over the election of council members. Since the council's authority was restricted principally to matters of tribal enrollment and approving leases, Hamilton found that real decisions about the use of tribal resources tended to drift away from the council and to Campbell's farm chapters. It also meant that tribal resources that might have been used to develop the mineral potential of the reservation were diverted to the subsistence agricultural program.

Through Hamilton's urging, the tribal council had pressured the Department of the Interior to approve the first oil and gas lease on the reservation in 1922, which went to Louis Hill of the Great Northern Railroad. The Hill lease had been loosely written and resulted in little exploration. Hamilton urged that the Blackfeet with the aid of the Geological Survey conduct its own exploration, while the Department of the Interior pressed for outside leases with such restrictions that no company was willing to engage in the effort. Another decade passed before oil discoveries of a commercial nature brought some relief

to the financially distressed Blackfeet. In the meantime, Hamilton moved to challenge directly Campbell's authority on the reservation (NA, 1921b, 1921c; U.S. Senate, 1932:12768–12774).

Biennial elections gave both Campbell and Hamilton a platform from which to air grievances. Campbell proved Hamilton right when Campbell directly intervened in elections to assure that Blackfeet sympathetic to his development program were elected to council positions. In 1924, when Hamilton failed to gain a council seat for the first time in over ten years, he immediately laid plans to wrest the council from Campbell's supporters. In the process it forced Hamilton to make a choice that he had avoided in the past. Since Campbell's influence rested primarily with the full blood population of the reservation, Hamilton made an overt appeal to disgruntled mixed bloods and consequently exposed a factional split in the tribe that had always been near the surface (NA, 1924a).

In 1926 his effort brought success. Once again Hamilton was on the tribal council with a majority supporting him. Unsatisfied with regaining control of the council, Hamilton proceeded to use it as a means of dismissing Campbell from his position as superintendent. In the election of 1926 Hamilton had allied himself with State Senator Frank McCabe, a shadowy figure on the reservation who was often accused of using his influence with tribal members to secure their allotments (NA, 1926a, 1926b).

Government policy since 1917 had allowed individual allottees to request an early end to the trust period established under the allotment acts. Generally, an allottee could not sell or encumber his allotment until after a 25-year trust period had expired. The administration of thousands of trust patents, however, proved such a burden to the overworked Office of Indian Affairs that a request for a fee simple patent from an allottee was usually approved. Some authorities were suspicious that McCabe was bribing allottees to request fee patents and then buying their land. Many full bloods who had not become accustomed to working their allotments were easily persuaded to ask for fee patents. Campbell accused McCabe of fraudulently acquiring land from full bloods and obtained a federal indictment of the State Senator. Although a jury acquitted McCabe of wrong doing, Campbell made an issue of his friendship with Hamilton (NA, 1919c, 1926a, 1926b, 1926c, 1926d).

At the first meeting of the 1926 Council, Hamilton as the presiding officer inappropriately turned the meeting over to McCabe. McCabe forced a resolution out of the council condemning Campbell, and, acting beyond the council's authority, dismissed him from office. The Office of Indian Affairs refused to recognize the council's action and sent an investigator to the reservation. The investigation proved that the charges against Campbell had little substance and resulted in the Indian Office refusing to further deal with the tribal council. For several years the council had met on a regular basis, but after 1926 the Office of Indian Affairs insisted that it meet only at the call of the superintendent. Hamilton had apparently hoped that his extreme action would lead to an airing of the differences between his ideas for the reservation's future and Campbell's, but the investigator chose not to deal with substantive questions of reservation policy. By 1928, carrying the scars of two decades of political war with the Office of Indian Affairs and reservation agents, Hamilton refused to run for a council seat (NA, 1926c, 1926d).

Ironically, by 1928 Campbell had become convinced that the future of the reservation depended on the development of cattle and sheep grazing, a position that Hamilton had taken from the beginning. The allotment of the reservation into over 3,000 separate units, however, made it difficult to establish grazing on an economical basis. To assure adequate range, hundreds of leases were executed each year with individual allottees. Failure to secure even one lease could exclude several hundred acres from use in the middle of a grazing range and make it virtually unusable. The problem of multiple tenures interfering with efficient range management was not a problem restricted to Indian reservations. The difficulty existed throughout the State of Montana, where land within natural grazing ranges might contain

several private patents along with federally owned and state-owned land. In 1928, a group of ranchers in southeastern Montana established the first grazing district in the nation. Through enabling legislation from both the state and Congress, a local board received permission to organize use of the range containing multiple tenures. The method became the basis for the Taylor Grazing Act of 1934 (Schlebecker, 1963:114–115; NA, 1932, 1936b).

In 1928 as well, the Office of Indian Affairs created an Agricultural Extension Service for Indian reservations. One of the service's first efforts was to use the experience in Montana to rationalize grazing on Indian reservations. Indian Office officials attempted to gain powers of attorney from individual allottees and create the kind of local grazing districts that proved successful in southeastern Montana. The program brought Robert Hamilton out of retirement. Hamilton was not opposed to the idea, but he saw the Indian Office's exercise of power of attorney as further eroding what little authority remained to the tribal council. He would have probably supported the effort if the council exercised the power of attorney, but he could not favor surrendering any additional power to the Office of Indian Affairs (NA, 1932).

Hamilton resisted the government's program and convinced enough allottees to refuse the Indian Office's request for powers of attorney. The Office of Indian Affairs, which met similar opposition on other reservations, called for a conference in 1932 in Washington to resolve the dispute. The Blackfeet elected Robert Hamilton as their representative. The old political fighter, perhaps mellowed with age, indicated that he would act as a statesman. Although still adamantly opposed to approving the Indian Office exercise of powers of attorney, he suggested a legal document that gave the Indian Office the same authority in fact but not in name. It was perhaps a symbolic gesture and it was his last contribution to Blackfoot welfare. After a short illness and before he could attend the national grazing conference, Hamilton died. He might have been gratified to know that the Indian Office adopted his method of obtaining permission to organize grazing districts on the Blackfoot Reservation (NA, 1939).

In any context outside of an Indian reservation, Robert Hamilton would have been known as a politician. In his long struggle to gain for the Blackfeet a measure of home rule, the Office of Indian Affairs described him as a radical agitator, a horse thief, and a malcontent, but never as a politician. Unlike many of his followers, Hamilton was capable of making his way in White society. On three occasions in his life he left the reservation but always returned. The reservation was his forum and the place where he could be an Indian. He was instrumental in creating on the Blackfoot Reservation a community based on shared political aspirations, while maintaining a spiritual link with the past. He helped educate his people to use the political process and the federal courts to establish Blackfoot legal rights. He tried, perhaps without success, to find the institutional means to preserve the essence of Blackfoot culture in the midst of a twentieth-century reality. During Hamilton's lifetime, the Blackfeet changed from a nomadic people dominated by war and the hunt to a people identified with a new sense of community. His was of the last generation that could bridge the gulf between the traditional and the future. When the Blackfeet gained a degree of autonomy through the Indian Reorganization Act of 1934, they owed much of their ability to exercise that autonomy and press for further rights of self-determination to Robert Hamilton.

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"Look at My Hair, It is Gray": Age Grading, Ritual Authority, and Political Change among the Northern Arapahoes and Gros Ventres

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ABSTRACT

The pre-1934 political developments among the Gros Ventres of Montana and Northern Arapahoes of Wyoming are compared to elucidate the differing ways in which they responded to the major political reorganization imposed upon them. The divergent patterns of response reflect differences between the tribes' age grade systems in interplay with differing contact experiences.

ACKNOWLEDGMENTS.—My fieldwork and ethnohistorical research on the Northern Arapahoes was supported primarily by a Doris Duke grant in 1969–1970, a grant from the Faculty Research Foundation of CUNY in 1974–1975, a postdoctoral fellowship from the Smithsonian Institution in 1976–1977, and a postdoctoral fellowship from the Center for the History of the American Indian, Newberry Library, in 1977–1978. My fieldwork and ethnohistorical research on the Gros Ventres was supported by the American Philosophical Society in 1979 and by a grant from the National Institute on Aging in 1980.

Introduction

When the Northern Arapahoes of Wind River Reservation in Wyoming and the Gros Ventres of Fort Belknap Reservation in Montana meet at intertribal celebrations, they delight in the fact that their dialects are mutually intelligible and that they can often identify common ancestors. But they may just as often remark on the apparent differences in contemporary Gros Ventre and Arapahoe ethos; for example, native political leaders point to the contrasts in tribal politics. Reservation superintendents also have indicated that there was a basic contrast between Arapahoe and Gros Ventre political behavior during the twentieth century. By the time tribal government was reorganized under the provisions of the Indian Reorganization Act of 1934, the Gros Ventres are viewed to have replaced traditional political culture with Western representative democracy. Bureau of Indian Affairs (BIA) officials attributed the change to extensive intermarriage with Whites (Berry, 1973). On the other hand, Arapahoes are portrayed as a people anxious to "modernize" politically but unable to learn new ways (Elkin, 1940). Differences between Gros Ventres and Arapahoes offer the Plains scholar an excellent opportunity for controlled comparison, for these two peoples are of common origin and once lived in much the same manner. However, the observations of BIA personnel do not explain adequately how and why the two tribes differ politically. While it is apparent that by the 1930s clearcut differences existed between Gros Ventre and Arapahoe political cultures, the differences cannot be identified and understood in terms of differential cultural or biological assim-

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ilation. This paper compares Northern Arapahoe and Gros Ventre political reorganizations prior to 1934 and suggests that the contrasts are a product of differences between the tribes' age grade systems in interplay with differing contact experiences.

Efforts at political "modernization" (that is, elective, representative democracy) preceded the Indian Reorganization Act by some thirty years, although these early councils were portrayed as ineffective by BIA personnel and social scientists alike. Students of Native American politics usually suggest one or both of the following reasons for the failure of the early business council governments on the Plains. (1) The councilmen were powerless to make or implement decisions independently of the federal government and, therefore, either were held in contempt or ignored by their tribesmen (Jorgensen, 1972:137–139). (2) Majority rule, political centralization, and the authorization of representatives to make decisions on behalf of tribal members were incompatible with traditional political culture, and, therefore, elected business councils provoked dissension and dissatisfaction (Farber, 1970:124–126). Most observers of twentieth-century Plains politics suggest that tribal councils were comprised of young, "progressive," "mixed bloods" experienced in dealing with Whites. One scholar of tribal governments describes politics on the Plains prior to 1934 as an ongoing conflict between traditional leaders and mixed blood councilmen (Taylor, 1980:49–50). However, the histories of the Arapahoe and Gros Ventre business councils do not fit the general characterizations of Plains tribal councils. Arapahoe and Gros Ventre councils had universal popular support, in large part due to a tradition of an overarching political organization based on age grades.

Establishment of the Business Council

The Indian Office introduced and instituted a business council at Wind River Reservation in 1893 and at Fort Belknap Reservation in 1904. The new form of government was intended to expedite BIA programs of directed change and also to alter Arapahoe and Gros Ventre concepts about the nature and constraints of authority. Tribal members were required to elect a small number of men to speak and legally act for their tribe in the leasing of reservation lands and other transactions involving trust property. Federal officials anticipated that decision-making by consensus during all-tribal councils would be rendered obsolete by the introduction of the business council role. BIA personnel encouraged the election of young, English-speaking men in the hope that the influence of elderly or "conservative" opponents of Indian Office policies would be undermined. Both the Arapahoes and the Gros Ventres readily adopted the election of business councilmen, but the changes resulting from business-council government were not entirely those anticipated by the federal government.

The Northern Arapahoe Business Council, 1908–1934

As early as 1893 Arapahoes had a business council. Congress had formally authorized tribal business councils in 1891 by providing that tribes could lease trust land with the consent of the Secretary of the Interior and the tribal "business council" (26 Stat. 794–795). Between 1893 and 1907 the Arapahoe councilmen (whom Arapahoes referred to as "chiefs") varied in number and met infrequently. Council members were selected in a general meeting of the tribe. There were no elections; rather, senior males conferred with each other until consensus was reached as to which men would be appropriate choices. Sometimes the Indian agent initiated the selection of particular individuals. It was not until 1908 that a formally constituted group of six men began to meet fairly regularly with the agent. Meetings usually were presided over by one of the councilmen. Although the reservation superintendent reported that the councilmen were "elected," in actuality, until 1930 (when Superintendent R.P. Haas imposed balloting) the councilmen were chosen at a general meeting of the tribe by elderly ritual authorities (Fowler, 1982:166). Those elders, having conferred among themselves and con-

sulted potential selectees, picked six men from the crowd. The six were led in circular procession around a large drum. In this context, the drum was viewed as sacred and the ceremony was conceptualized as a form of prayer. "Honor songs" then were sung, which morally obligated the new councilmen and their families to make a generous distribution of gifts to the crowd. When one of the councilmen "retired" or died, the elders would choose a replacement in like fashion (Fowler, 1982:87, 98, 149–151). This Drum Ceremony dramatically impressed upon the individuals chosen that they had a sacred duty to the tribe as a whole. The ceremony also was public acknowledgment of the councilmen's subordination to tribal elders.

Prior to the establishment of the business council, important government proposals usually were brought before the entire tribe. The tribe was feasted at government expense and officials waited while issues were discussed at long length. All tribal members had to be in agreement (or at least not in overt disagreement) before the chiefs would acquiesce to the government proposals. With the inception of the business council, the BIA had anticipated that the six men representing the tribe could be more easily convinced or coerced to support government policies and programs, that these six men could come to an agreement much more quickly (and inexpensively) than the tribe as a whole, and, finally, that the new form of political organization would discourage elderly Arapahoes from attempting to influence tribal politics. However, the operation of the Arapahoe business council did not conform to BIA expectations.

Although councilmen professed cooperative intent and encouraged and coordinated the efforts of Indian employees working on Agency projects, they also served as advocates for tribal interests (NA, 1918a). Councilmen obtained permission to send a three-member delegation to Washington in 1908 and again in 1913. The councilmen representing the Arapahoes and those representing the Shoshone tribe, which also occupied Wind River, worked to convince the Indian Office to allow tribal members to have the tribal income that was held in trust, suspend water charges on trust lands, fulfill promises made during the land cession agreements, and put a stop to graft on the reservation. The delegations had some success in these endeavors. For example, the tribe was given 1300 head of cattle to start a tribal herd; the cattle had been promised when land was ceded by the Arapahoe and Shoshone tribes in 1904. The relative success of the delegations contributed to the tribal members' acceptance of councilmen as political intermediaries (Fowler, 1982: 131–133). To the BIA's annoyance, the councilmen steadfastly refused to promote economic individualism. The councilmen's priority was to obtain the money from leases on tribal land in the form of per capita payments to all tribal members. The council members objected to the Indian Office's efforts to use tribal funds to finance farming or ranching enterprises for individuals. As Lone Bear (chairman of the business council until his death in 1920) put it: "They [the BIA] think their own way and think they can change the Indians in accordance with their [Whites'] own way of living. They think the Indians can make money and have money like they [Whites] can, but that is impossible." Sam Wolfrang (Painted Wolf), councilman from 1913 to 1933, concurred: "No one except a few of the able bodied men [benefit] by expending this money in such work [financing individuals]. The only way, in justice to the Indians, is to . . . let the Indians, each and everybody as a tribe, get an equal share of these monies" (NA, 1914a).

The councilmen were expected by their constituents to articulate tribal consensus, not to make decisions independently. One of the elderly councilmen, Goes In Lodge, who served from 1913 to 1920, advised his fellow councilmen, "Consult your other people who are not members of the council and have it understood outside [in the community] and when you come in here [to the council meeting] and then, whatever you do, there is not any chance for any argument anywhere" (NA, 1915b). The superintendent complained to the Commissioner that the Arapahoes "do not seem to be willing to abide by the action of such [business] committee, but wish to discuss

and settle in general meeting all questions of any importance" (NA, 1910).

Lone Bear was head councilman and main spokesman on the council, and Yellow Calf was next in prominence. These leaders were headmen from the two main bands on the reservation. Although Lone Bear and Yellow Calf were the primary spokesmen, they merely articulated the consensus of the council as a whole. A search of all council minutes filed in the National Archives reveals that when the council voted on reservation matters, the Arapahoes almost always voted unanimously.

Periodically, the Arapahoe business council met jointly with the Shoshone business council, which represented the Shoshones. In their talks with Indian Office officials the councilmen worked to suppress dissension among themselves and to present a unified view on most reservation problems. Militant confrontations with BIA personnel were deliberately delegated to councilmen from one of the Shoshone factions referred to by Arapahoes and Shoshones as the "Mixed Bloods" (Fowler, 1982:147–148).

The Ceremonial Elders, a group of Arapahoe ritual authorities who supervised all tribal religious ceremonies, had considerable influence over the councilmen, as well as over Arapahoes in general. Attempts to attain personal, supernatural powers by and large ceased after reservation settlement, when Arapahoes were no longer going to war. Concomitantly with the demise of the quest for personal medicine power, the authority of the Ceremonial Elders was augmented because these officials were increasingly relied upon for mediation with the supernatural. The Sun Dance, which was directed by the Ceremonial Elders, gradually became the only avenue to ritual status for most Arapahoes. Despite Indian Office prohibition of the ceremony, it apparently was held annually with the exception of a ten-year period from 1913 to 1922. The introduction of Christianity was not competitive with native Arapahoe religion; rather, Arapahoes participated in both Christian ritual and the native religion. Arapahoes skillfully played off the Catholic and Episcopal missions against one another, involving themselves in the Catholic mission program when the Episcopal missionary pressed the abandonment of native customs and values, and participating in Episcopal programs when the Catholics opposed Arapahoe ceremonies too vigorously. Revitalization movements, including peyote and the Crow Dance, were introduced among the Arapahoes; but these movements, like Christianity, augmented rather than conflicted with traditional ritual life (Fowler, 1982:122–126, 136–137).

The first council members (men like Lone Bear, Yellow Calf, Goes In Lodge) were middle-aged individuals who had personal medicine power. Most were ex-warriors. By about 1930, a compartmentalization of secular and sacred authority had begun to develop. Men with high positions in the ceremonial leadership hierarchy did not serve as councilmen or directly involve themselves in political interaction with Whites; secular leadership was relegated to middle-aged men or occasionally to elderly men without authority in the sacred sphere. Yet, the Ceremonial Elders had a great deal of influence. They chose the councilmen, had what amounted to veto power in matters of importance, and were always consulted on major issues. (See Fowler, 1978, for a more complete discussion of the ways sacred and secular leadership interpenetrate among the Arapahoes.) Most of the older councilmen spoke and understood English fairly well, but one or two middle-aged bilinguals were asked to serve on the council so that they could interpret for the senior councilmen.

In sum, on the surface of it, Arapahoe business councilmen accommodated themselves to a Western model of political organization. But they also related to their constituents and toward each other in ways that reflected and reinforced political values of unanimity, generosity, modesty, and respect for the authority of the aged. They acted as intermediaries and spokesmen, articulating group consensus. For these reasons, the business councilmen had marked success at generating and retaining the support of their constituents. Until the 1930s, the councilmen usually served until death or retirement, several for terms as long as twenty or twenty-five years.

The Gros Ventre Business Council, 1904–1934

The business council was established during Superintendent William Logan's term (1902–1910). Logan made it a practice to consult with a council of tribal leaders in order to talk over reservation matters and elicit support for agency programs. In a 29 January 1904 meeting, he asked one such council to agree to his spending money from tribal grazing leases for a flour mill. Running Fisher spoke for the Gros Ventres, commenting that he was willing to allow Logan to decide how best to spend tribal funds. Logan, gratified, commented that he had "never been associated with better Indians" and that he was "proud of their efforts to get along." He proposed to make the council meetings a regular event (FARC, 1904). It is not clear how councilmen were selected before 1907, but, thereafter, councilmen were chosen at an all-tribal gathering, after a discussion among the influential males had produced a number of "nominees" who were then approved by tribal members in a voice "vote." The selection of councilmen on 21 October 1907 was precipitated by instructions from Acting Commissioner of Indian Affairs C.F. Larabee, who requested Logan to call a meeting of both the Gros Ventres and Assiniboines, who also occupied the Fort Belknap Reservation. The purpose of the meeting was an appointment of a business council and the authorization of that council to sign a proposed leasing agreement with a sugar beet processing company (NA, 1907).

By 1911, Superintendent H.H. Miller (1910–1914) reported that the Gros Ventres, who settled in the Hays district, had an elected business council comprised of seven members elected by voice vote in a tribal meeting. In addition, the Lodgepole and Milk River districts each had seven-member business councils representing the Assiniboines. Miller, who sought to undermine the tradition of decision-making by consensus during a meeting of the entire tribe, was hopeful that the councilmen would make decisions independently of tribal members in general (NA, 1911).

During the 1920s, Superintendent John T. Marshall (1921–1929) helped implement annual ballot elections in each of the three residential areas. Marshall commented, "If the right men are elected as councilmen, a great deal of time is saved in transacting tribal affairs, as more ground can be covered and quicker action obtained by presenting the matter to the tribal [business] council than if it had to be obtained through holding a meeting before the whole tribe" (NA, 1924). He also hoped that men of the "younger generation" would be elected (NA, 1921). The Assiniboines elected three councilmen to represent the River district and three councilmen to represent the Lodgepole area. The Gros Ventres elected six councilmen, usually one who was a resident of the River district and five from Hays. The council met on 10 July and 5 December 1921 and drafted and adopted a constitution and by-laws (Fort Belknap, 1921–1929).

The superintendents at Fort Belknap were initially optimistic that the business councilmen would prove to be more "progressive" leaders than the chiefs of former years. However, as each superintendent's term wore on, his optimism faded. Although they tried to cooperate with the superintendents' efforts at economic development, councilmen viewed their first task to be advocacy for their tribe.

As advocates, the business councilmen were expected by their constituents to try to improve reservation living conditions by pressuring or persuading the superintendents and the Indian Office in Washington to provide adequate assistance to individuals desirous of starting farming or ranching enterprises. Gros Ventre councilmen were also expected to obtain federal recognition of the Gros Ventre as the "leading" tribe, if not the only tribe with rights, on the Fort Belknap Reservation.

The council's agitation for economic reforms resulted in a delegation to Washington in the spring of 1912. The Gros Ventre and Assiniboine delegates reiterated the points stressed by a general council of both tribes on 5 March 1912. The Gros Ventres did not have as much income from leases and land cessions as the Arapahoes. While

per capita payments could ease the poverty of the latter, the Gros Ventres could not have benefited very much from per capita payments. For this reason the delegates pressed for the allotment of Fort Belknap, urging that individuals also should receive much needed financing as well as sufficient grazing land to support the number of stock adequate for family subsistence. They also requested increased rations for the elderly. The delegates were taken to meet the President and were able to obtain an increase in rations, a promise of an investigation of agency programs, and a pledge to seriously consider the delegation's other requests (NA, 1912).

During the 1920s, the council sought to improve opportunities for employment and to exert more control over leases and the expenditure of tribal income. Before the reservation was finally allotted in 1923 and 1924, councilmen fought to influence the allotment policy, sending two delegations to discuss the issues involved. Despite the council's efforts, the Fort Belknap Indians found little relief from poverty, although Superintendent Marshall was transferred after the council complained about him to officials in Washington (Berry, 1973). In 1929, a Senate investigation into reservation conditions at Fort Belknap (as well as on other reservations) gave the council a new forum for their numerous complaints, including inadequate rations for the elderly, unfulfilled promises from the 1895 land cession agreement, an inadequate loan program, unfair irrigation charges, agency graft, poor health and education facilities and programs, and poor roads (United States Senate, 1932:12551–12641). The investigation had the effect of bolstering BIA support for stockraising and brought some administrative reforms at Belknap (Berry, 1973). The Gros Ventre councilmen also continued to press the tribe's claim against the United States for the violation of the 1855 treaty. (The tribe eventually won a judgment from the Court of Claims in 1935.)

In most matters, the Gros Ventre and Assiniboine councilmen had few disagreements. Together they protested mismanagement of reservation resources and argued for more self-determination (Fort Belknap, 1921–1929). The Gros Ventres, however, insisted on the primacy of Gros Ventre rights at Fort Belknap. They argued that in the 1860s and 1870s they had agreed that some of the Assiniboines could occupy the lands assigned to the Gros Ventres in the Treaty of 1855, but that since that time other Assiniboines moved on the reservation without the Gros Ventres' consent. In their strategy to win federal allies in the struggle over rights to Fort Belknap, councilmen sought to convince the superintendents that Gros Ventres were more "progressive" than Assiniboines. They often succeeded. Superintendent J.D. Martin (1914–1916) described the Gros Ventres as much more progressive than the Assiniboines and the Gros Ventre councilmen as "quite active in seeking some method or plan for the improvement of the Indians." He was critical of the Assiniboine councilmen: "Some of them have endeavored to stir up discord and dissatisfaction among the Indians. . . ." According to Martin, the Assiniboines had "much less livestock per capita than the Gros Ventres and much less ambition" (NA, 1914b, 1915a). At times, the Assiniboines made a more favorable impression on federal officials.

In 1913, the Gros Ventres sent two councilmen to Washington to protest the Indian Office's plans to allot Belknap lands to all of the Assiniboines living at Fort Belknap, arguing that most should be allotted at Fort Peck with other Assiniboine bands (FARC, 1913). To the Gros Ventres' annoyance, they were informed that the Assiniboines were entitled to allotment at Fort Belknap. Although the Gros Ventres were not consulted about the matter, Fort Belknap Reservation was created by the Act of 15 April 1874 (18 Stat. 28) from part of the land reserved for the Gros Ventres in 1855. (The reservation was reduced in size in 1887.) The government justified the allotment of the Assiniboines because the Act provided that not only the Gros Ventres but also, at the President's discretion, "other Indians" could be placed at Fort Belknap.

In the 1920s, the Gros Ventre councilmen

worked to generate support among their constituents by dominating the council meetings in which Assiniboines also participated. After the annual council election, the councilmen elected officers. The Gros Ventres generally voted unanimously, taking advantage of cleavages among various bands and kin groups within the Assiniboine community, so that a Gros Ventre was always elected president of the council. The other officers were selected equally from the two tribes; but when two Assiniboines were nominated, the Gros Ventre vote was decisive. On 11 July 1921, John Buckman, a Gros Ventre, was elected president and Steven Bradley, also Gros Ventre, was elected treasurer. Two Assiniboines were elected vice-president and secretary (Fort Belknap, 1921–1929). This pattern continued during the decade. When relations were particularly strained between the two tribes, as they were in 1922 and 1923 when the federal government enrolled several Assiniboines against the wishes of the Gros Ventres, the Gros Ventre councilmen retaliated. On 3 July 1922 the council elected Gros Ventres to all the council offices (Fort Belknap, 1921–1929). Superintendent Marshall was moved to comment on the nature of Gros Ventre–Assiniboine relations, "Assiniboines are a more self-abnegatory race than the haughty, aggressive and the more or less arrogant Gros Ventres" (NA, 1921).

The most distressing issue for the Gros Ventre councilmen during the 1920s was the work of the Enrollment Commission, which had been initiated by the government and selected by the tribes to prepare an official roll of Fort Belknap Indians entitled to allotment at Fort Belknap. In 1921, the commission, comprised of Superintendent Marshall and one councilman from each tribe, began work. When they submitted the roll to the Indian Office, officials refused to approve it and, instead, added several names of "foreign Indians" (Canadian Assiniboines) and of individuals with Indian ancestry who were not accepted as Indians by the people at Fort Belknap. The tribes at Belknap were informed that the Indian Office did not want "homeless Indians" creating problems of administration. The Gros Ventres were outraged. The councilmen wrote to the Secretary of the Interior on 10 July 1922: "We are sore . . . . These people sponged on our kindness for some years, now make this a pretext of their claim. . ." (NA, 1922a). The Enrollment Commission called a meeting on 29 July 1922 and tribal members were asked to vote on accepting the changes made by the Indian Office. Apparently, the Assiniboines present outnumbered the Gros Ventres: an Assiniboine was elected to chair the meeting. When a vote was taken, there were 206 votes in favor and 161 votes opposed to enrolling the individuals (most of whom were "Canadian" or "Canoe" Assiniboines) who had been added to the roll by the Indian Office (NA, 1922b). The Gros Ventres bitterly petitioned to remove the disputed names from the roll (and the allotment list), pointing out that the "original Assiniboine" had been accepted at Fort Belknap in the late nineteenth century, but not the successive waves of intruders from Canada and Wolf Point who "just slipped in." The Gros Ventres complained, "We have become poorer and poorer. . . " (NA, 1923).

During the first three decades of the twentieth century, the Gros Ventre business councilmen organized themselves into a very cohesive group of advocates. While Gros Ventres delegated to their councilmen the authority to articulate the needs and concerns of tribal members, councilmen were not supposed to make decisions independently of the tribe. Reservation affairs were discussed in frequently held community meetings at Hays and particularly important decisions were referred by the Gros Ventre councilmen to a tribal-wide vote.

On the council itself, the Gros Ventre councilmen were unwilling to delegate authority to individuals. During the 1920s, decisions were made only after all six councilmen talked over an issue and agreed on a position. On 5 December 1921, when the Assiniboine councilman who had been elected council secretary made a motion that he be authorized to sign reimbursable agreements on behalf of the tribes, the Gros Ventres and

several Assiniboines refused to agree, arguing that it was not acceptable for one individual to "sign papers for all," especially when an issue had not been thoroughly discussed among all the councilmen (Fort Belknap, 1921–1929). There was usually a main spokesman for each tribe (John Buckman for the Gros Ventres), but his comments always reiterated viewpoints of the council as a whole. Superintendent Martin noted the unity of the Gros Ventre councilmen and remarked on the contrasting nature of the Assiniboines: "The Assiniboines are less united in purposeful action. They are somewhat given to falling into factional groups between which there is more or less strife. . ." (NA, 1915a).

In the early years of the business council during Logan's term, the councilmen were mostly elderly men with outstanding war records and means substantial enough to be conspicuously generous or to be selected as a Keeper of one of the two tribal medicine bundles, the Sacred Pipes. Among these elderly warriors were Bushey Head (b. 1835), Sleeping Bear (b. 1850), Skunk (b. 1843), Lame Bull (b. 1830), and Otter Robe (b. 1847). Lame Bull was an ex-Keeper and Otter Robe a Keeper of the Flat Pipe at the time of their election to the council; and Sleeping Bear was a Keeper of the Feathered Pipe. There were a few younger, bilingual men in their thirties who served on the council as interpreters.

By the second decade of the twentieth century, the councilmen were by and large in their middle and late forties. Six men—John Buckman (b. 1873), The Boy (b. 1872), Victor Brockie (b. 1880), Rufus Warrior (b. 1883), Peter Capture (b. 1866), and Steven Bradley (b. 1876)—dominated the business council well into the 1930s. Like their predecessors in council office, they behaved in ways that reflected the cultural ideal of generosity. Councilmen, who had horse herds and a few head of cattle, helped the needy and contributed to tribal celebrations (for example, the Grass Dance). Regina Flannery (1947:65) noted that The Boy was particularly prominent in Grass Dance ceremonies during the first two decades of the twentieth century. Several councilmen were supporting orphans or other individuals in need.

After 1910, Gros Ventre elders did not involve themselves in tribal government to anywhere near the extent that the Arapahoe elders did. Their gradual withdrawal from secular affairs was coterminous with a general decline in tribal members' participation in native religious ritual. The two ritual authorities, Keepers of the two sacred tribal bundles, still held the sacred Flat Pipe and Feathered Pipe ceremonies (Carter, 1936b; Dusenberry, 1963:49). By the third decade of the twentieth century, however, it was impossible to find a Gros Ventre willing to take on the responsibility of either of the pipes. In fact, by the turn of the century, it is clear that the Grass Dance ceremony had become the focus of Gros Ventre ceremonial life, replacing the Sun Dance and men's sacred lodge dances (Kroeber, 1908:238, 268; Flannery, 1947:39–41). Among the Arapahoes, when the Grass or Crow Dance was introduced, it was integrated into the entire Arapahoe ceremonial order: that is, it was viewed as a religious ritual and the director of the ceremony was an elder. The Gros Ventres viewed the Grass Dance as a secular ritual; but nonetheless one which reinforced tribal solidarity, offered an opportunity for individual recognition, and provided an occasion for the expression of Gros Ventre cultural identity. Grass Dance officials could force participation; in addition, considerable social pressure was exerted on tribal members to contribute financially to the dances, to accept offices, and to join in the dancing. When "offices" were transferred, recipients and their families were obligated to give-away large amounts of property. While elders were called upon to participate by reciting their war exploits, the ceremonies were directed by middle-aged men (Flannery, 1947:65). After 1920, so-called agricultural fairs and other social events, such as grave decoration ceremonies, naming ceremonies, social dancing, and games (all of which included give-aways) became the focus of Gros Ventre ceremonial life at Hays. Gros Ventres who settled in the southern section of Hays were called the

Mountain Crows, and those who settled in the northern section were called Black Lodges; in a competitive spirit, the two groups alternated sponsorship of the celebrations (Fowler, 1979). Middle-aged men assumed responsibility for organizing all of these affairs. Religious expression apparently centered around Catholic rites. Probably the Catholic rituals filled a void in Gros Ventre life but did not in themselves draw tribal members away from native ceremonies. Native rituals were held infrequently due to discord about the qualifications of ritual authorities, as well as opposition from missionaries.

Three of the long-term councilmen (Buckman, Bradley, and Warrior) were the offspring of Gros Ventre mothers and White fathers, but were reared by their Gros Ventre relatives and had learned English from attending a year or two of mission or government boarding school. Government reports distorted the nature of leadership among the Gros Ventres during this time because all persons with White ancestry were labeled "mixed bloods" and assumed to be oriented toward White world view and ethos. However, from the Gros Ventre point of view, and also the Arapahoe perspective, Indian identity was defined by cultural not biological criteria. How a person behaved determined whether he was truly Gros Ventre. For example, ethnologist John Carter, while attending the 1906 Assiniboine Sun Dance, made note of a man who had been adopted by a Gros Ventre family when he wandered into their camp as a small child. This man (married to a Gros Ventre) was the child of White parents; nonetheless, he had been "a Gros Ventre Indian all his life" (Carter, 1936a). When questions arose as to who was entitled to enrollment in the Gros Ventre tribe, tribal members were adamant that individuals who behaved like true Gros Ventres should be enrolled, regardless of "degree of blood." In a well-known case in 1918, one woman of Gros Ventre and White ancestry was supported by the general council of tribal members, against the expressed wishes of the superintendent. Tribal members argued that she had "always admitted" her Gros Ventre ancestry and had "visited the relatives on the reservation," and "the Indians of the reservation have visited at her home and were recognized as relations." Other individuals, with the same combination of Gros Ventre and White ancestry, were rejected for enrollment because they did not live on the reservation, and/or associate with other Gros Ventres (NA, 1918b).

Persons classified as Gros Ventre Mixed Bloods by the Gros Ventres themselves lived on Milk River and had been reared by or closely associated with their White relatives. These Mixed Bloods, as well as their Assiniboine neighbors along Milk River, were involved in farming on a larger scale than the Indians at Hays and Lodgepole. The River district contained about one-half of the population of Fort Belknap, but most people living there were Assiniboines (NA, 1909, 1919).

The Gros Ventre councilmen were by and large residents of Hays, had been reared by Gros Ventres, and were married to either Gros Ventres or non-Gros Ventre Indians. In short, the councilmen were "true Gros Ventres." Similarly, few Mixed Bloods served on the Arapahoe business council, although some councilmen had White ancestry. As with the Arapahoes, Gros Ventre council membership was markedly stable. The elected councilmen generated consistent, universal support and served many successive terms until retirement or death.

We find, then, that elected business councils were fully institutionalized among both the Arapahoes and Gros Ventres, but that the notion of "representative democracy" was never accepted; instead, the role of councilman was accommodated to native cultural concepts of authority. The councilmen, who worked closely with and sometimes came into conflict with Federal personnel, were not culturally assimilated, "marginal" individuals. Reports that differences in the political life of the Arapahoes and Gros Ventres were due to differential biological assimilation are likewise inadequate. In fact, Indian census rolls show little difference in biological assimilation between the two tribes until the

1920s. The most apparent difference was that elderly ritual leaders had great influence over Arapahoe political process, but among the Gros Ventres they withdrew from political life. To understand the reasons why the business council was not the instrument of assimilation that the BIA thought it would be and to account for the apparent differences in political reorganization between these two tribes, it is necessary to compare Arapahoe and Gros Ventre political process in the nineteenth century.

Divergent Patterns of Political Reorganization in the Nineteenth Century

The business council role was basically that of political middleman or intermediary in Indian-White relations. Earlier, in the nineteenth century, both intermediary leadership and the mechanisms of consensus formation that helped motivate support for intermediaries were well developed among Arapahoes and Gros Ventres. Variations in political culture were due to differences between the Arapahoe and Gros Ventre age group systems in interplay with the differing contact conditions experienced by the two peoples.

Age Grading and Consensus Formation

In the first major study of traditional Plains political organization, Robert Lowie (1916:931) compared the age group systems of the Arapahoes and Gros Ventres and considered them virtually identical. Some sixty years later, in the most comprehensive comparative study of Plains age group systems since Lowie's effort, Frank Stewart came to the same conclusion. Stewart (1977:323, 326–327) drew structural parallels between the two tribes, indicating that in age set systems, age grade dances, and transition ceremonies the two tribes basically were alike. Up to a point the age group systems of the two tribes did have much in common, but the contrasts were also striking.

All Arapahoe ceremonies were directed by the Water Pouring Old Men, a small group of ritual authorities who supervised the participants in religious rituals and motivated social conformity year-round through a complex of supernatural sanctions. No comparable group of ritual authorities directed Gros Ventre ceremonies or intervened in secular matters. Also, the Arapahoes' strong value orientation toward social cohesion was reflected in the fact that each of the age grade statuses was occupied by only one age set. (An age set is a group of peers who as youths are inducted into the first age grade and move through a series of age grades together. Age grades are categories of persons who are in the same life stage and who have a particular status and role or roles in their society.) Occupying each Gros Ventre age grade there were several age sets, between which was a strong spirit of rivalry (Kroeber, 1908:232–233).

Arapahoes viewed the life course as a progression through four general age categories, the "four stages of life": child, unformed or immature youth, mature adult, elder. Males were organized into seven unnamed age sets and progressively passed through a series of grades or "lodges." A lodge ceremony was undergone by the age set members when one member vowed to complete the ritual. Youths first joined the Kit-Fox Lodge, then the Star Lodge, both of which were viewed as primarily secular in nature. With their fellow age set members, mature males entered four sacred lodges: the Tomahawk Lodge, the Spear Lodge, the Crazy Lodge, and the Dog Lodge. Elders entered the Old Men's Lodge. In essence, progression through the lodges bestowed increasingly greater sacred knowledge. Individuals in all the age sets could vow to enter the Sacrifice Lodge or Sun Dance. Superordinate to all the lodge men were the Water Pouring Old Men, seven elders who had earned a requisite number of "degrees" through personal ordeals and sacrifices and who directed all tribal rituals and acted as custodians of seven tribal medicine bags. The primary tribal medicine bundle was the Sacred Flat Pipe, which was in the lifelong custody of the Pipe Keeper. The Water Pouring Old Men and the Pipe Keeper served as mediators between the Arapahoe people and the Creator; their authority was

validated and reinforced by supernatural sanction (Mooney, 1896:986–989; Kroeber, 1902–1907:151–230).

The Gros Ventres also viewed the aging process as a transition from the first to the fourth "stage of life." Among male youths, completion of the Fly Lodge marked an age set's entry into the series of age-graded ceremonial orders. Mature men successively entered the Crazy, Kit-Fox, Dog, and Drum lodges. The Sacred Lodge for which elders were eligible was the Law Enforcers. After this ceremony was completed, the elders were thought of as "retired" (Cooper, 1957: 173–243). The members of any of the age sets could vow to participate in the Sacrifice Lodge. This lodge differed from that of the Arapahoes in its greater emphasis on ceremonies related to war and the exercise of purely personal, shamanistic supernatural powers (such as, the production of water from the center pole) (Kroeber, 1908:268). As among the Arapahoes, elders could be selected as liturgists and advisors (Grandfathers) by younger men participating in the lodges. According to Kroeber, however, none among these elders had directive authority in relation to the Gros Ventre ceremonial hierarchy in its entirety (Kroeber, 1908:230). The Gros Ventres had two sacred tribal medicine bundles, the Flat Pipe and the Feathered Pipe. Tribal members apparently decided for themselves to which Pipe they would be most devoted (Cooper, 1957:165, 171–172). Whereas the Arapahoe Keeper of the Sacred Flat Pipe held his office for life, terms of office of the Gros Ventre keepers in the historical period varied from approximately four to twelve years.

In addition to entering the six Gros Ventre age grades, the members of each age set joined either the Star or the Wolf Society. Comprised of men from all levels in the lodge series, these moieties were competitive and the relationship between the Star and Wolf men paralleled the enemy-friend relationship between individuals. Apparently, an individual also selected his enemy-friend from outside his own moiety (Flannery, 1953:40). It is likely that these moieties or "streams" impinged on the age hierarchy principle. (Such seems to be the case in similar African age group systems; Spencer, 1976.)

The age group systems of the Arapahoes and Gros Ventres served as an overarching political structure during the spring and summer when the sacred lodges and communal hunts were held. All the bands were obligated to assemble for a lodge ceremony, all-tribal councils were convened, and policing duties were assigned to Arapahoe age sets and to Gros Ventre age sets or societies. Band headmen, who articulated the consensus of a council of influential males during an all-tribal meeting, could direct an age set to enforce council decisions. Gros Ventre societies apparently also could enforce society decisions while their members participated in a lodge ceremony. Lemuel Burke (1877) observed a Gros Ventre age set or society in action on 29 April 1877:

> The Gros Ventres commenced to move for buffalo. There seemed to be a division of sentiment in the direction they should move, part wishing to cross and go in a northernly direction from the fort and others wishing to go down the river some distance before crossing the river. Early quite a number of them commenced to move to cross over at the fort. In the meantime the Soldier Lodge was holding a council and determined that the camp should move down on the south side of the river five or six miles [8 or 9.5 km] before crossing, and that they should go down to the vicinity of the Half Breed Camp and try to find buffaloes in that vicinity. The crossing at the fort had already commenced and the Soldier Band at once ordered them to stop, and proceeded to throw the plunder out of the boat and took hold of the rope to turn the boats loose on the river. They were only prevented from doing so by two White men who were to row the boats. In the meantime quite a party was engaged in crossing their horses and effects over the river, at the wagon crossing, by fording. The Soldier Band soon paid their respects to them, and brought the whole party back with the exception of one or two lodges who had crossed the river and gone. The Soldiers however had to kill some of the dogs to prevent them from persisting in crossing, but that soon brought the refractory party to obedience and the whole camp joined in the march down the south side of the river.

Among the Arapahoes, the Ceremonial Elders could also motivate tribal members to act in unison by exercising the threat of supernatural sanction, that is, the views of the Water Pouring

Old Men were thought to be revelations from the Creator.

Intermediary Authority: Indian-White Relations in the Mid-Nineteenth Century

A century before the introduction of the business council, regular contact with White traders (Lewis, 1942; Jablow, 1950) and, later, more intensive contact with settlers and government officials led to the emergence or the elaboration of the role of intermediary chief. Introduction of intermediaries or "political middlemen" in Indian-White relations appears to have set well with both Arapahoes and Gros Ventres. Regina Flannery's (1953:36) consultants said that as early as the late eighteenth century the selection of Gros Ventre "tribal [that is, intermediary] chiefs" was formalized in a ritual performed by elders. The public acknowledgment of Arapahoe "tribal chiefs" by elders is documented as early as 1851.

The Arapahoes

As subsistence became more and more difficult without aid from Whites, intermediary chiefs were increasingly important to the Arapahoes (NA, 1848a). In the 1840s, Arapahoes commonly solicited provisions from emigrants and government officials through "friendly chiefs," men who made reputations for assisting or befriending Whites (Garrard, 1850:88, 314; Heslep, 1937: 371–373; Pancoast, 1930:191–193; NA, 1848b, 1849). After the United States initiated the peace councils of 1851, 1867–1868, and 1876, it was the task of intermediary chiefs to convince the Indian Office that the tribe had kept the peace agreements and, therefore, was entitled to treaty provisions.

At the Fort Laramie treaty council of 1851, the Arapahoes, as well as several other Plains peoples agreed to end intertribal hostilities, designate intermediary chiefs, keep the peace with Whites, recognize certain designated tracts as controlled by specific tribes, and to allow the United States to establish roads and military posts in Indian country. The United States agreed to make annuity payments to the tribes for 15 years (Kappler, 1904:594–596). Chiefs were given the responsibility for distribution of annuities. The Arapahoes selected Little Owl, an acknowledged friendly chief and a band headman, as "head" or "tribal" chief. Afterwards, an Arapahoe elder spoke to the tribe urging support for Little Owl (*Missouri Republican*, 1851).

During the 1860s, Indian-White hostilities were frequent, which resulted in the suspension of annuity issues. During these times, the role of the intermediary chief was less meaningful. By 1869, Medicine Man was acting as spokesman for the Northern Arapahoes in dealings with Whites (Campbell, 1869). His interpreter was Friday, a bilingual Arapahoe who was headman of a small band. (Friday also had interpreted for Little Owl and served as interpreter for all successive intermediary chiefs until 1883.). Medicine Man was particularly alert to opportunities to establish friendly ties with Army officers, who were influential in Washington at the time and also able to issue provisions. In 1869 and 1870, there were clashes between Indians and Whites in the Sweetwater country; Medicine Man traveled to Fort Fetterman and convinced the commander that Arapahoes were innocent of the depredations, thus forestalling military reprisals (NA, 1870).

Black Coal succeeded Medicine Man as the tribe's intermediary chief, and he assumed responsibility for urging federal officials to settle Arapahoes on a reservation where they would be safe from hostile Whites and would be issued provisions regularly. On behalf of the Northern Arapahoes, Black Coal met with the Peace Commission in 1876. At the time, Arapahoes had little choice but to settle permanently either on the Sioux Reservation near Fort Randall or in the Indian Territory, where they would be issued provisions until they could be "self-supporting" (U.S. Senate, 1876). But Black Coal and other chiefs subsequently persuaded Army officials to intercede for the Arapahoes. In 1877, the Northern Arapahoes obtained permission to settle in Wyoming (NA, 1877a, 1877b).

Throughout the 1850s, 1860s, and 1870s, Ceremonial Elders had exerted great influence over the intermediaries, as well as over Arapahoes in

general. The Sun Dance and the men's sacred lodges took place periodically. The recorded statements of the intermediary chiefs also indicate that elders (most probably the Ceremonial Elders) had considerable authority when decisions were made about Arapahoe-White relations and that they continued to validate the status of intermediary chiefs. The influence of elders is clear from the statements of Sorrel Horse, one of the war chiefs who brought word to the 1867 Peace Commission that the Arapahoes would attend the peace council. He noted that he spoke on behalf of "our old men" (Simonin, 1966: 118–119).

By the time Arapahoes arrived at Shoshone Agency in 1878, the chiefs who served as intermediaries were viewed as successful advocates. At the agency, the Arapahoes were organized into several bands. The headman of the largest band was Black Coal, and the next largest band acknowledged Sharp Nose as headman. These two bands had a serious quarrel just prior to settlement on the reservation; yet, in their meetings with the agent or other government officials, the headmen and their followers exhibited no ill will toward one another. Black Coal, referred to by all as "head chief," was always the main spokesman. And the other headmen always concurred with Black Coal (Fowler, 1982:76). Actually, the positions taken by these headmen, including Black Coal, were arrived at in general councils in which the influence of the elderly ritual authorities was paramount. Black Coal made it clear that he acted only to relay tribal consensus when he told the commissioners at the 1891 land cession council that he could not agree to their proposals until the subject of the cession was discussed among all adult Arapahoes in a general council (NA, 1891:44–45, 61):

> I am only one Indian . . . . I want all the Indians to talk it over first . . . . If I should sign a treaty without the consent of the other Indians, some of them would kill me . . . . I only say what others tell me to . . . . Others tell me to say what I am told to say. I don't say these things myself.

The extent of the authority of the elderly ritual leaders was apparent throughout the early reservation era. One particularly revealing incident occurred in 1879 when an Arapahoe killed one of the Arapahoe members of the Indian police. The murder was especially disturbing to the tribe because it threatened to destroy the agent's confidence in the Arapahoes as peaceable and untroublesome to the government. Elderly ritual authorities persuaded the killer to surrender himself to the agent, and they also pressured the kin and friends of the victim to forego revenge. Black Coal, despite his status as "head chief," had no authority to intercede. His role in the incident was to make a public speech to the agent reaffirming the Arapahoes' determination to be "good" (that is, peaceful) Indians (NA, 1879).

The years of deprivation prior to reservation settlement and the hardships of reservation life took their toll among the elderly. By the 1880s, only a very few Water Pouring Old Men were living, and the ritual knowledge of these men had been passed on only in part (Mooney, 1896:986). Not all the ritual knowledge of the old men was transferred to successors, however; authority to supervise and direct all tribal religious rituals and to intercede with the Creator on behalf of the tribe was assumed by other old men. The Keeper of the Sacred Flat Pipe, Weasel Bear, took on this role from the 1890s until his death in 1904 (Kroeber, 1902–1907:309); and others succeeded Weasel Bear. By altering or reinterpreting rituals, the ceremonial duties were accommodated to the abilities or level of training of the persons selected as Ceremonial Elders. The Sun Dance continued to be performed regularly and the age graded men's lodges took place periodically throughout the 1880s and 1890s, as well, although not all age peers joined. The social duties of the lodge men apparently were greatly diminished. The successive groups of Ceremonial Elders were able to exert considerable influence over Arapahoes, not only in the context of rituals, such as the Sun Dance, but also in social relations generally.

The Gros Ventres

Among the Gros Ventres during the mid-nineteenth century, intermediary chiefs appear to be less conspicuous than among the Arapahoes. Buf-

falo hunting was possible for the Gros Ventres much longer than for the Arapahoes, and there was a good trade in buffalo robes until the 1870s. Individuals could exchange robes for provisions at the trading companies situated on or near the Missouri. The difficulties faced by Gros Ventres during the mid-nineteenth century were more often those precipitated by war with other tribes than by the threat of military attack from Whites (Ewers, 1974). The Gros Ventres were not bothered by incursions from White settlers until the 1870s. The intermediary role in Indian-White relations seems to have been conferred only sporadically and, according to Flannery (1953:36) without formal installation by elders (see also Lewis, 1942:42–43).

At the Blackfoot treaty council in 1855, Isaac Stevens requested each tribe to authorize a head chief to serve as main spokesman for the tribe. Despite Flannery's informants' assertion that Sitting Woman assumed this role, treaty proceedings do not so indicate. The Piegan, Blood, and Northern Blackfeet were represented by "head chiefs," but the Gros Ventres presented no one spokesman. Stevens unsuccessfully tried to promote Bear Shirt as Gros Ventre head chief; instead, at the council eight "principal chiefs" (headmen), acting in unison, signed the treaty (NA, 1855; Hatch, 1856:625–626). When F.V. Hayden (1862:340) met the Gros Ventres in 1855, he described them as "united in their undertakings" but mentioned no intermediary chiefs. Until the mid-1860s, there were no individuals who consistently served as spokesmen.

By the 1860s, Sitting Woman, a famous warrior and "the bravest man in the [Gros Ventre] nation" according to the agent, was acknowledged by the Gros Ventres as "head chief" (Upson, 1864:440). Sitting Woman signed the treaties of 1865 and 1868 in his capacity as the Gros Ventres' tribal chief (NA, 1865; NA, 1868b). Although Agent Upson noted that the Gros Ventres were "the best governed tribe in the Blackfeet nation" and that "the head chief's word is law," this statement is most probably an exaggeration. Flannery's informants related stories about Sitting Woman's bravery, but also about his responsiveness to the expectations and wishes of his tribesmen. In 1868, at the height of his reputation, Sitting Woman and several other war chiefs "abandoned the tribe" and with only 29 lodges of followers joined the "hostile Sioux" despite the Gros Ventre tribe's firm commitment to peace with Whites (NA, 1868a). It is likely that the intermediary role became less relevant after Congress failed to ratify the treaty agreements of 1865 and 1868. In any case, since the other tribes in the "Blackfoot Nation" were involved in sporadic clashes with Whites, it was difficult for the Gros Ventres, who were fewer and weaker than the Piegan, Blood, and Blackfeet tribes, to cultivate friendly relations with Whites.

In the 1870s, after Sitting Woman's death, no individual appears to have been acknowledged as Gros Ventre intermediary chief by government officials or traders or by the Gros Ventres themselves. It may be that after 1870 the Gros Ventres were increasingly suspicious of Whites; although the agent reported that smallpox was contracted from "half-breeds" in Canada, the Gros Ventres blamed Whites for the outbreak of the disease (NA, 1869). In 1872, the Gros Ventres had two prominent leaders, each of whom led a portion of the tribe. White Eagle (referred to as second in authority to Sitting Woman in 1867 by Wright, 1867:256) and his people stayed to the south and allied themselves with the Crows, and Young Man Bear and his people roamed to the north in the vicinity of the Cypress Mountains (Stuart, 1872; NA, 1872). Subsequently, no individuals were named as intermediary chiefs until after the 1878 establishment of the Fort Belknap Agency for the Gros Ventres and Upper Assiniboines.

During the nineteenth century, the Gros Ventre age grade system began to collapse. All-tribal religious ceremonies became less frequent, and the influence of elderly ritual authorities waned. It is possible that tribal gatherings became less feasible because there were frequent epidemics during the century, and in these times it was the custom for the tribe to scatter. Devastating population loss also may have undermined re-

spect for ritual leaders, who were considered to be responsible for the well-being of the tribe. (The Northern Arapahoes, who numbered less than the Gros Ventres, also experienced epidemics in the 1830s through the 1850s, but they did not have large losses after the early 1860s.) Alexander Culbertson (in Stevens, 1853:96) noted that between 1830 and 1853, the Gros Ventres had been reduced (through disease and warfare) by one-fourth. In 1853, there were at least 3000 Gros Ventres; by 1869, 2000; by 1870, 1300; and by 1885, only 852 (Stevens, 1853:96; NA, 1869; Lincoln, 1885:130). The agent reported a loss of 160 people during a measles epidemic in 1864 (Upson, 1864:512) and a loss of 741 from smallpox in 1870 (Reed, 1870:200). On the latter occasion, most of the dead were young adults, those who ordinarily would have been beginning their induction into the lodges. The last Drum Lodge was held in the 1830s; the last Kit-Fox Lodge, about 1870; the last Dog Lodge, sometime in the late 1870s; the last Crazy Lodge, in 1884; and the last Sun Dance was held in 1885. Thereafter, the threat of military reprisals discouraged the tribe from conducting the outlawed Sun Dance ceremony (Lincoln, 1885:131). During these years, individuals reportedly could enter the men's graded lodges out of sequence and could join the lodges at an inappropriate age. One of Cooper's informants entered the Law Enforcers in 1880 at the age of 20, and joined the Fly Lodge in 1907 at the age of 47 (Cooper, 1957:174). The disruptive conditions of the mid-nineteenth century apparently had an effect on the office of Sacred Pipe Keeper, as well. In the 1860s, there were several Flat Pipe Keepers who died before completing the customary four-year term (Cooper, 1957:34). In contrast, when the Keeper of the Arapahoes' Sacred Pipe died in 1907, he had held office for at least 35 years.

In about 1874 the Gros Ventres' Flat Pipe was transferred to Crow Bull. Crow Bull had married an Assiniboine woman, and after Crow Bull's death in 1887, she neglected the Pipe. By 1888, when the Gros Ventres settled permanently in the Little Rockies area at Fort Belknap, there was little game and semistarvation conditions prevailed. Apparently, there was some difficulty in finding someone willing to take on the financial and social responsibility that accompanied the office of Keeper of the Flat Pipe or Keeper of the Feathered Pipe (Cooper, 1957:35, 131). At Fort Belknap, the competitive dances and give-aways of the Starmen and Wolfmen became the focus of ritual participation for most Gros Ventres (Kroeber, 1908:234).

In sum, during the reservation period, Arapahoe Ceremonial Elders continued to legitimize secular leadership and to exert control over social life in general; however, among the Gros Ventres, ritual authorities (whose influence was less pervasive than that of the Arapahoe Ceremonial Elders to begin with) lost much of the influence they formerly had possessed. In the 1880s and 1890s, the repercussions of the elders' diminished influence were political turmoil and less effective advocacy on the part of Gros Ventre leaders.

Reservation settlement created optimum conditions for the reemergence of intermediary leadership, because survival largely was dependent on the government's issue of provisions, tools, seed, and stock. Without a well-defined and ritually reinforced age hierarchy and centralized religious leadership, however, the Gros Ventres had difficulty mobilizing political consensus. Agent Lincoln compounded the problem of political reorganization by encouraging the captain of the agency's Indian police to vie for the position of tribal chief. Following instructions from Washington, Agent Lincoln hired Gros Ventres and Assiniboines as Indian police and empowered them to make arrests and arbitrate disputes. His encouragement of the police seems to have precipitated, or at the very least exacerbated, a rivalry between two leaders, Lame Bull and Running Fisher.

Running Fisher (also known as Jerry) was active in horse raiding and intertribal battles during the 1860s and 1870s, and had made a reputation as an outstanding warrior (Curtis, 1928:183–184). The traders at Fort Belknap in the 1870s mentioned that he frequently brought in robes to trade; however, they do not identify him as a

prominent headman (Fort Belknap Journal, 1874–1879). In 1880, Agent Lincoln (NA, 1880) mentioned Running Fisher as one of the Gros Ventre "chiefs," but after Lincoln appointed Running Fisher captain of the Indian police in 1881, Fisher is identified by the agent as "head chief" (U.S. Senate, 1883).

Lame Bull also was a prominent warrior and an ex-Keeper of the Sacred Flat Pipe. He was widely recognized as a man of "good reputation," one selected to assist a newly formed age set, one who interceded in quarrels to prevent violence, and one who gave horses to families in need (Flannery, 1953, *passim*).

In communications with the Indian Office, Agent Lincoln consistently represented Running Fisher as the tribal (intermediary) chief; yet, in councils in which all the Gros Ventres participated, Lame Bull is acknowledged by the Gros Ventres (including Running Fisher) as head chief. For example, in 1886 when an inspector was sent from Washington to investigate conditions at Fort Belknap Reservation, Lame Bull and Running Fisher spoke on behalf of the tribe. Lame Bull was identified in the tribal council as intermediary chief and Running Fisher as captain of police; yet, in the subsequent report to the Commissioner, the inspector (NA, 1886) identifies Running Fisher as "head chief" and makes no mention of Lame Bull. On 12 August of the following year, Agent Fields and the agent for the Bloods arranged a peace council between the Bloods, and the Gros Ventres and Assiniboines of Fort Belknap. Lame Bull was acknowledged as "chief of the Gros Ventres." He stated, "All the young men obey me . . . . " Jerry Running Fisher also spoke: "I talk for the Indian Police. The chiefs will say something afterwards" (NA, 1887). Both Lame Bull and Running Fisher agreed that the tribe wanted to learn to farm and raise stock and to educate their children, and both men expressed willingness to cease horse raiding. Their rivalry appears to have been personal in nature.

In the 1890s, the United States began to pressure the tribes at Fort Belknap to cede part of the Little Rockies, an area where trespassing miners were extracting gold. In 1894, the agent held a council with Gros Ventre and Assiniboine headmen and they unanimously decided not to cede the lands and to ask Agent Kelley to eject the miners. The tribes expressed the desire to learn to operate the mines themselves (Kelley, 1894:182). In view of the tribes' opposition to ceding the mining area, a delegation from Fort Belknap was invited to Washington to discuss the matter with Commissioner Browning. Running Fisher, Otter Robe, Sleeping Bear, and Sitting High represented the Gros Ventres. They voiced their anxiety about the proposed cession and about economic conditions at Fort Belknap. Federal officials apparently convinced the delegates that they would receive more aid to subsistence if they were agreeable to the cession, because in October 1895 three of the four delegates agreed to cede the mountain area (NA, 1894a, 1894b).

At the cession of 5–9 October 1895, the conflict between Running Fisher and Lame Bull came to a head. Lame Bull and his followers opposed giving up part of the Little Rockies, while Running Fisher's group agreed to the cession. During the proceedings, 64-year-old Lame Bull exclaimed, "Look at my hair; it is gray. I say the same thing as I said before. I don't want to sell." Then, 48-year-old Running Fisher attempted to link opposition to the cession with immaturity: "All the old people and these people that have good sense are willing to let the reservation go, but them young fellows are like children playing; they don't know what they are talking about." In point of fact, the difference of opinion did not correlate with age differences. What is particularly striking is the way that the speakers inverted the traditional symbols associated with old age and youth in order to sway public opinion. Elderly opponents are portrayed as foolish; youthful allies are said to be wise. Chaos reigned and the social friction was traumatic for the Gros Ventres. File Steel (Lame Bull's brother-in-law) commented, "My people have said many different ways, and I don't know which side to go . . . . I don't know what to say . . . . " And Sleeping Bear said in distress, "Indians are talking all different

and I don't know what to do . . . ." (NA, 1895:10, 25).

Religious leaders had little ability to induce unanimity. Both the Feathered Pipe and the Flat Pipe keepers, Sitting High and Otter Robe, supported the cession; yet, the majority opposed it. Despite the Gros Ventres' belief that ritual authorities should be in agreement, the elderly leaders were in conflict with one another. For example, the Keeper of the Flat Pipe, Otter Robe, defied Lame Bull, an ex-Keeper of the Flat Pipe.

When the vote was taken, 153 out of 181 adult male Assiniboines and 37 out of 153 Gros Ventres voted for the cession. There were just barely enough votes to satisfy the government that a majority of the Indians at Belknap favored the cession. Taking advantage of the remarks of Running Fisher's group (which were recorded in the transcript of the council meeting), the commissioners Pollock and Grinnell claimed to the Indian Office that the Gros Ventre opposition to the cession came from "rebellious youth." Not surprisingly, the loss of the Little Rockies area aggravated intratribal dissension among the Gros Ventres. Lame Bull's death in 1908 and the aging of Running Fisher lessened the conflict and facilitated the subsequent institutionalization of a business council, which had the support of the whole tribe. By this time, the withdrawal of elderly Gros Ventre ritual authorities from direct involvement in tribal politics was almost complete.

Conclusions

From accounts of federal officials and social scientists in the early twentieth century, it would appear that the Gros Ventres were, at that time, more biologically and culturally assimilated into White society than the Northern Arapahoes and that this accounts for the contrasts in their political histories. I have argued that the assimilationist approach is not adequate to explain the tribes' divergent patterns of political reorganization. First, conclusions about the supposed cultural assimilation of the Gros Ventres were based inappropriately on statistics that reported the extent of *biological* assimilation (Taylor, 1980: 41–42). Moreover, judgments about differential cultural assimilation have been made rather arbitrarily: Arapahoes clearly embraced extensive ritual and political innovations, and Gros Ventres accommodated themselves to changes, such as the disappearance of native religious organization, without relinquishing a distinctly Gros Ventre world view and style of social interaction. In both tribes, most families in the 1920s had some income from wage work, tended gardens, raised hay, and some kept a few head of cattle. Arapahoe and Gros Ventre councilmen pressed the federal government for greater self-determination and for the same kinds of economic aid, although the Arapahoes gave more emphasis to their desire for the distribution of tribal income in per capita payments and the Gros Ventres (with less tribal income than the Arapahoes) stressed that individuals should be helped to finance their farms and ranches. Both peoples placed a high value on generosity to others; food and property acquired by an individual were shared or given away during tribal ceremonies. In both tribes, political authority was nondirective and decision-making was based on group consensus. In actuality, the most significant difference was that, in contrast to the Arapahoes, among the Gros Ventres elderly native religious leaders withdrew from political life in the early twentieth century; in fact, among the Gros Ventres, native religion was gradually replaced by Catholicism.

Two factors brought about the difference between the ways that Arapahoes and Gros Ventres reorganized their political institutions. First, although both tribes had a traditional political organization based on age grading, which could mobilize and unify people from various band or kin groups, the Arapahoe age grades were supervised by tribal priests. Hence, the Arapahoes could contain conflict and restrain individualism more effectively than the Gros Ventres. For example, the struggle between Running Fisher and Chief Lame Bull has no counterpart among the Arapahoes. By the 1890s, the Gros Ventres ap-

parently saw no special role for elders in solving the difficult problems of reservation life. Second, contact conditions on the Northern Plains were different from those on the Central Plains: these differences affected political reorganization among the Gros Ventres and Arapahoes. The large numbers of emigrants who traveled the Oregon Trail through Arapahoe country brought about a drastic reduction of game and made it impossible for the tribe to continue to survive by hunting buffalo. The Arapahoes became dependent on the government for much of their subsistence twenty years earlier than did the Gros Ventres. The dependence on the government made intermediary chieftainship more important to the Arapahoes than to the Gros Ventres. Elderly Arapahoe priests worked to unify the people behind these chiefs so that the chiefs would be effective in dealing with federal officials. On the other hand, in Canada and on the Missouri and its tributaries, the Gros Ventres were involved in trading with Whites earlier and more intensively than were the Arapahoes who were more remote from the traders. In consequence, the Gros Ventre age grade system was disrupted by intertribal warfare and large population losses from epidemics far earlier than was the Arapahoe age grade system. Reservation settlement provided the conditions that revitalized the intermediary leadership role among the Gros Ventres and, at the same time, further undermined the authority of elders. Among the Arapahoes, the influence of the priests continued, reinforcing the authority of councilmen, on the one hand, and convincing Whites that Arapahoes did not have an efficient, "modern" tribal government, on the other.

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History and Identification of Blood Bands

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ABSTRACT

The history of band organization of the Blood Indians is presented, especially characterizing how the Bloods maintained their traditional band structure until well into the reservation period.

The Blood Indians are part of the Blackfoot-speaking nation, which historically inhabited the area from the upper Missouri River in Montana to the north Saskatchewan River in Alberta. A typical Northern Plains tribe, they had a buffalo economy until they were obliged to settle on their reservation in southern Alberta in 1880.

Like other Northern Plains tribes, the Bloods were divided into a number of smaller units for the purpose of hunting and food gathering. At certain times of the year, such as in winter or if the buffalo were plentiful in a particular area, all or most of the tribe might be found camped in one area. Within the large assemblage of tipis, the internal organization of individual bands was clearly defined. Similarly, when the tribe gathered together in a huge circle for the Sun Dance, each band had its designated position, with those from the northern part of the hunting grounds on the north side of the circle and the others in the south.

George Bird Grinnell, an invaluable recorder of the Blackfeet, stated that each of the tribes was "subdivided into gentes, a gens being a body of consanguineal kindred in the male line" (Grinnell, 1892:208). However, this simple definition does not fit the historic realities of the Blackfoot nation. While perhaps the gens was the nucleus of individual bands, there were so many exceptions to the rule that the description can hardly apply. Rather, Lowie's (1954:87) definition that the first subdivision of a Plains tribe was a band, or "a local group of people jointly wandering in search of sustenance," is more appropriate.

The band was, of course, nothing more than a functional unit. It was small enough to provide a viable economic base for its members yet large enough to permit the development of certain religious and social amenities, such as warrior societies, medicine pipe rituals, and gambling. Unlike their neighbouring Woodland tribes, who had to travel in small family units because of the solitary nature of the animals they hunted, the Bloods were able to form relatively large bands because of the availability of the herd-oriented buffalo. Yet the sizes of the bands often depended upon their particular economic situation. In 1855, for example, James Doty (1966:24) noted that the main camp of Bloods consisted of some 200 lodges, while the destitute Hairy Shirt band, which still used dogs as their main beasts of burden, had only 18 lodges. The larger camp, combining the Followers of the Buffalo and the Fish Eaters bands, could congregate in such large numbers because it was autumn, the buffalo herds were plentiful in their region, and the camp could easily move when the horses had consumed the grass within the immediate area of the camp. The poor Hairy Shirts, on the other hand, were hampered by their lack of mobility, both in hunt-

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ing and travel. Yet each group was able to function within its prescribed limits.

Flexibility was the key to the success of the band system. Each band was flexible in size, structure, and movements. Within the course of a year, a band might join with another band for several months, divide because of intraband controversy, move northward to join the Blackfeet if the buffalo were more plentiful in that region, or winter with the Piegans because of family relationships. Similarly, if a band became too large, it might split into two bands. This happened in the 1870s when the Many Children broke off from the Many Fat Horses band. If disease or warfare should decimate a band, it could easily amalgamate with another and ultimately lose its identity. A good example is the Bear People band, which became involved in a battle with their fellow Blackfeet and, after the leaders were killed, the remainder of the tiny group fled to the Fish Eaters and were absorbed by them.

The variations were numerous. There was even one situation where two members of the Fish Eaters band, Scalp Robe and The Duck, gathered a strong family unit around them. It had all the appearances of a new band and, because the two men walked quickly like pacing horses, the group was known as the Pacer Fish Eaters. Yet neither man wanted to separate from the parent band, so their followers remained with the Fish Eaters—almost a separate band, but not quite.

The Blood bands, as such, had no taboos or restrictions as did the warrior and religious societies. The practice of marrying within a band was frowned upon, not because of any band taboo, but because the couple was probably related. As one informant (Charlie Pantherbone, 1960 pers. comm.) stated: "Two persons from the same band cannot marry. The leading man was usually the father of all the members, so he did not want his children to marry each other."

On the other hand, if the band member was an orphan adopted from another band, a widow who had remained in her husband's band after his death, a young man who had come to work as a herder, or one of the many nonrelatives to be found in a band, then the restriction did not apply. One of my informants, for example, had been born into the All Tall People band but had been raised by his maternal grandmother, a Fish Eater, and later married a Fish Eater. The band affiliation was not important; the blood relationship was.

As a matter of fact, a humorous situation developed among the wealthy Fish Eaters band, as described by an informant (Pantherbone, 1960, pers. comm.): "There are those we called the *Sik-awk-oh-mi-yowi* or Roundabout Fish Eaters," he said. "This referred to men from other bands who were adopted into the Fish Eaters and later married someone from the band. They became Fish Eaters by a roundabout or devious route."

Grinnell's (1892:208) definition, cited earlier, that the Blood bands were patrilocal was also supported by The Reverend John Maclean (1895:251) who said, "The wife goes with her husband to his gens and lives there with him"; yet here again, field research indicated that exceptions were almost as common as the norm. In fact, a matrilocal practice appeared to be quite common where the girl was from a more affluent band and particularly if her father was a chief. For example, a Blood named Bull Shield joined his wife's band, the Scabbies, and became its leader when his father-in-law died in 1878. Another man, Running Rabbit, was a Black Elk but joined the Fish Eaters when he married the favorite daughter of the chief of that band. In later years, he was recognized as a subchief of the group and was appointed a treaty chief by the Canadian government.

When one examines the family of Red Crow, the wealthy head chief of the Blood tribe and leader of the Fish Eaters, the movement of young men to his band is evident. Crop Eared Wolf, a member of the Many Children, joined the Fish Eaters in the 1840s when his sister married Red Crow and he later became its leader; Sleeps On Top, Yellow Creek, and Medicine Pipe Stem transferred from the All Tall People when their sister married Red Crow; and No Chief and Many Mules joined when they married daughters

of the chief. As my informant, Pantherbone (1960, pers. comm.) stated:

> If a man marries, it is his choice as to the band with which they will live. If a man from the Black Elks married a Fish Eater and decided to move to her band, he is transferred and is then considered to be a Fish Eater. He will usually make a choice which is most advantageous to him. One woman, who married a man from another band, had a younger brother. When she moved to her husband's band, she took her brother with her. When this boy grew up and married he could, if he wished, go back to his original band with his wife, he could take her to his sister's husband's band, or he could go to his wife's band. This situation frequently occurred among the Bloods.

These movements among bands were governed largely by the economic and social position of the groups in question. If a wealthy band was noted for its war record and its preoccupation with horse raiding; if it possessed a shaman who consistently brought good luck to the band in hunting; or if the political leadership of a band placed it in a favored position, young men would be encouraged to join its ranks either upon marriage, as a relative of the bride, or even as herders.

External forces that affected the economy or status of a band could also have significant effects. In the 1840s, when the chief factor (i.e., man in charge of the trading post) of the American Fur Co. married the sister of Seen From Afar, the Fish Eaters' chief, his band was immediately placed in a special status. "One reason Seen From Afar was chief," said an informant (Percy Creighton, 1954, pers. comm.), "was that his brother-in-law, Mr. Culbertson, used to give him all kinds of gifts and made him the richest warrior among the Bloods."

Similarly, in 1883 when the Indian agent appointed a man named Calf Tail, a nonentity, as a head chief of the tribe in order to thwart the efforts of a war chief who aspired to that position, many Bloods flocked to the new band. Realizing that the leader was a government appointee, they expected to share in the favors they believed would be forthcoming. Ironically, Calf Tail died within a few weeks of his appointment, leaving the band without their expected windfall, so they were jokingly dubbed the Orphans.

The status of a band usually rested with the reputation or prowess of its leader. By and large, the chiefs are the ones who are remembered as important 19th-century figures; even if someone gained a reputation as a warrior or shaman, he was more likely to be recalled if this ability had enabled him to become a chief of his band.

While hereditary leadership was not mandatory among the Bloods, usually a son, brother, or son-in-law took control upon the death of a chief. However, because of the flexibility of the band system, the selection was made by the band members themselves, either by consensus or through a direct vote. If no consensus could be reached, a candidate might state that he was moving camp the following morning; this would force members of the band to decide whether to go with him or to remain with one of the other aspirants. Often two contenders might be brothers, such as occurred in 1870 when Black Bear, leader of the Fish Eaters, died in a smallpox epidemic, and both Red Crow and his brother Sheep Old Man aspired to the position. When Red Crow observed that public opinion was favoring him, he announced he was moving, and those who were undecided finally chose to follow the majority and go with him.

Yet a family relationship was not the only criterion in selecting a new chief. As George Simpson noted in 1841: "The office of Chief is often hereditary, but his birth alone, uncombined with talent or bravery, does not secure any consideration in the tribe, & the son of the most powerful Chief would, if unendowed with these qualities, sink into perfect insignificance & contempt, being what the Indians very emphatically term 'pitiful'." Simpson further noted that the chieftainship was not a lifetime appointment, but was valid only as long as the man was capable of leading the band. "When the first symptoms of old age creep upon him, he very wisely abdicates (to avoid being dismissed more brusquely) in favor of his son or some other successor."

Such a resignation was noted by a fur trader in 1794 (M'Gillivray, 1934:50), when The Swan, a leading Blackfoot chief, was "worn out with age and disability" and was "forced to resign his

place." The leadership was passed on to an apparent nonrelative, Gross Blanc, whom the trader described as "a man of unfounded ambition and ferocity."

Informants knew of a number of instances where the chief resigned to pass the title along to a younger man, usually a son or brother. Two Suns turned the leadership of the Fish Eaters over to his son, Seen From Afar, in the 1840s; Fish Child gave up his leadership of the Many Fat Horses in favor of his brother, Many Spotted Horses in the 1850s; and Blackfoot Old Woman became chief of the Black Elks while its former leader, Eagle Head, was still alive.

One of the obvious reasons why the leadership often passed down to a relative was that the majority of those who were prominent in the band were closely related. The eldest son or younger brother was privy to the daily routines and responsibilities of leadership and had the opportunity to become personally acquainted with the elite within the tribe, or the nation, thus placing him in a favored position for wielding political influence.

There is no tradition of violence ever erupting because of a dispute over leadership. Even during the perilous half decade from 1869 to 1874, when whiskey had unrestricted sale in Blackfoot country and intratribal conflicts were common, leadership controversy was never a factor. This can be attributed to the democratic nature of the band system; no chief had dictatorial control over his followers, even in times of war. If a Blood was dissatisfied with the leadership being provided, he could simply move to another band or, if he had his own following, create his own band. A dictatorial chief would soon discover that he had no following.

The successful chief usually possessed a number of positive qualities. He was generous, a good provider, and was often wealthy. He had a good war record and was frequently a ceremonialist, orator, and diplomat. Not every leader was gifted with all of these attributes, but certain men were remembered because they may have excelled in one or more. Medicine Calf, leader of the Many Tumors, was a noted orator; Calf Shirt of the Lone Fighters was a warrior of repute; Many Spotted Horses of the Many Fat Horses band was extremely wealthy; and White Calf of the Marrows was a leading ceremonialist and orator.

Seen From Afar, the Fish Eaters' leader, was considered to be particularly effective, drawing to his band a large number of nonrelatives because of his wealth, war record, and political influence. As one informant (Creighton, 1954, pers. comm.) described him:

> Seen From Afar was a generous man. When the Bloods went out hunting buffalo, some of the men would not have the proper horses, maybe just a couple of old pack animals. They would go to Seen From Afar and say: "May I use one of your horses to hunt buffalo?" And Seen From Afar would answer, "Sure, take that one over there." When the man came back after the hunt he would take the horse and plenty of meat to Seen From Afar's lodge, but instead of accepting the meat, the chief would say, "Keep it. I have enough of my own. And use my horse whenever you need it to go hunting." When he went to war, Seen From Afar would go on raid after raid. Instead of returning to his home camp after making a successful raid, he would send some young boys back with the captured horses and give them to his wives to put in his herd.

The Bloods did not have a head chief of the tribe, per se, which was always confusing to White traders and travellers. Just as the democratic system worked in selecting a band chief, so did the overall leadership of a mixed camp, or of the entire tribe, vary according to the circumstances.

If the Bloods went into a winter camp, with a number of bands strung out along a river valley, one leader among them was probably recognized above the others for his influence, tact, or diplomacy. It became his unspoken responsibility to send out criers to call council meetings as often as was required for the good government of the camp. The men smoked, drank tea, and discussed matters in an informal way, usually resolving any problem by consensus rather than by decree. If the matter could not be resolved, the leading chief would weigh the political mood of the meeting and either make a firm decision or put the matter in abeyance. If any chief did not agree with the decision, he was free to move his camp.

During the course of the winter, should the Bloods be joined by several other bands, among which was a chief with more influence than the one presiding, the new arrival would assume leadership of the council. These arrangements were usually informal and without rancor for, not surprisingly, many of the chiefs as part of the tribal elite were related through marriage. If a chief was jealous of his position, he would simply avoid camping with anyone to whom he might be obliged to take a secondary role.

There were, of course, instances when two leading chiefs might clash. Among the Blackfeet, Crowfoot superseded the elder Old Sun as the leading chief of the tribe and at a council meeting the decision was made that the two men would travel together to hunt buffalo after the Sun Dance. However, Old Sun decided to leave before the end of the ceremonies and was leading his wife's travois from the camp when Crowfoot tried to detain him forcibly by shooting at the horse. Old Sun, however, defied Crowfoot and left (Dempsey, 1972:68–69).

Among the Bloods, the political chiefs in ranking order of importance immediately prior to the 1877 treaty with the Canadian government were Red Crow, Father Of Many Children, Medicine Calf, and Many Spotted Horses. Opinions of informants varied according to their own band affiliations, but all agreed on the top four leaders.

When camped, whether as a single band or the whole tribe, the political chief had control over the warrior societies. To them he designated the responsibility for guarding the camp, controlling the buffalo hunts, maintaining internal order, and protecting the group while on the trail.

Once instructed, the warrior societies had authoritarian control within prescribed limits, and even the band chiefs were not above their commands. For example, once when the Piegans were hunting, a herd was sighted and instructions were given that no one was to go hunting until the following day. This was to give everyone a chance to prepare his horses and gear. A short time later, a warrior society patrol came across the leader of the Lone Fighters band with a dead buffalo. He tried to claim that the laws did not apply to him, but the warriors stripped him of his clothes, took his horse, and made him walk seven miles back to camp. Upon his arrival, his horse was returned, but his blankets were destroyed and the rest of his equipment retained by the warriors (Maclean, 1895:254–255).

The control of the warrior societies by the political chief applied only during times of peace. Should a situation develop where the camp was suddenly in danger from enemy war parties, a person who was renowned for his war experience took over the direction of the camp and the warrior societies. Usually the man was a band chief, but not always. So well known were these warriors that the change of command in an emergency situation was swift and unquestioned. Two of the leading war chiefs of the Bloods during the late nomadic period were Medicine Calf and White Calf. Even such leaders as Red Crow and Father Of Many Children, informally recognized by the traders as head chiefs of the tribe, would be relegated to band chief status and under the direction of the war chief during periods of danger.

There were five major bands in the Blood tribe and thirteen minor bands, each of the latter having a direct relationship with a major band. The leading bands were the Followers of the Buffalo (*Ini'-poy-i*), Fish Eaters (*Mam-yow'-i*), Lone Fighters (*Ni-tai'ks-ka*), Many Tumors (*Aka'ks-sumaks*), and Black Elks (*Siksi'n-oka*). Owing their allegiance to the Followers of the Buffalo were the Many Fat Horses (*Awa'-poso-otas*), Many Children (*Aka'-poka*), Marrows (*Ipa-ki'ni-ma*), All Tall People (*Mu-ti'-spita*), Knife Owners (*Neta'ks-isto-waniks*), All Short People (*Mu-ti'k-uks*), and All Black Faces (*Mutay'-siks-ki*). Related to the Fish Eaters were the Six Mouths (*Na-oy'-i*), Shooting Up (*Us-po'ki-omiks*), Many Brown Weasels (*Aw-kow'-ta*), Bear People (*Ky'-yo-tapi*), and Hairy Shirts (*Isi'-so-kas*). With the Many Tumors were the Scabbies (*A'pi-kaks*). Neither the Lone Fighters nor the Black Elks had any affiliates. Two additional bands were formed after the Bloods settled on their reserve: the Orphans

(*Imuks-ay'k-ni*), from the Followers of the Buffalo; and the Crooked Backs (*Namo-pi'si*), from the Many Tumors.

Of the major bands and their affiliates, the Followers of the Buffalo was undoubtedly the largest and for many years the most influential. The earliest known leader was Bull Back Fat who was described in 1833 by George Catlin (1926, I:33) as "the head chief of the Blackfeet nation; he is a good-looking and dignified Indian, about fifty years of age." After a quarter century of warfare between the Blackfeet and the Americans following the Lewis and Clark Expedition, Bull Back Fat was the man who finally established peace in 1832. He later permitted the American Fur Co. to construct Fort Piegan on the Upper Missouri and added to his own influence when his daughter married one of the traders. After the chief's death in 1842, the leadership of the Followers of the Buffalo was taken by his son, also known as Bull Back Fat.

The domination of the Blood tribe by the Followers of the Buffalo began to erode during the late 1840s. This was due in part to the change in leadership and to the fact that Seen From Afar became chief of the rival Fish Eaters band. Not only was the new leader a flamboyant man with an enviable war record, but about the same time as he assumed leadership, his sister, Holy Snake, married the chief trader of the American Fur Co., Alexander Culbertson. The combination of Seen From Afar's aggressive leadership and his influence with the traders soon tipped the balance of power away from the Followers of the Buffalo.

At the signing of the treaty with the American government at Judith River in 1855, Bull Back Fat and Seen From Afar were recognized as the two leading chiefs of the tribe, but the latter was given the signal honor of being the first to sign the document.

One of the problems experienced by the Followers of the Buffalo was that some of the bands that had separated from it had exerted such independence that they could not be counted upon for support in tribal political matters. For example, Many Spotted Horses of the Many Fat Horses band considered himself to be equal in stature to Bull Back Fat. He was one of the signers of the 1855 treaty and later, when he was drawn into a dispute within his own band, he abandoned it and took over the leadership of the Lone Fighters, a non-Followers of the Buffalo group. Furthermore, when the second Bull Back Fat died, the leadership of the band was taken by his son-in-law, Father Of Many Children, but the chief's nephew, the third Bull Back Fat, disputed the choice and separated with a number of followers to form the All Short People band. Needless to say, this group was not a supporter of the parent band.

Meanwhile, the Fish Eaters were able to maintain the allegiance of all its offshoot bands. In fact, the Many Brown Weasels and Six Mouths often travelled with the Fish Eaters, while the Bear People were ultimately absorbed back into the parent band.

By the time the Bloods gathered on the Bow River in 1877 to negotiate a treaty with the Canadian government, the Followers of the Buffalo were still numerically the largest band in the tribe, but its leader, Father Of Many Children, was ineffectual and so old that he had to be carried about on a travois. Many people considered his son, Hind Bull, to be a likely successor to the position, but the old man had been unwilling to resign. The Fish Eaters, on the other hand, were led by 47-year-old Red Crow.

The government recognized Father Of Many Children and Red Crow as the two chiefs of the tribe, but when the former declined the position of treaty head chief, Red Crow astutely arranged for it to be offered to a patriarch, Rainy Chief, who was a leader of one of the Fish Eaters' offshoot bands. Accordingly, Red Crow for all practical purposes became the sole head chief of the tribe.

Red Crow further consolidated his position when the treaty money was distributed. Each chief was asked to identify the members of his band so their names could be written on the paysheets and their money given out. The Followers of the Buffalo and their offshoot bands all

came forward separately, each being recognized as a distinct band. The Followers of the Buffalo were recorded as having 118 followers, the All Short People 210 followers, Marrows 107, and All Tall People 167. Altogether they had 602 people but they were listed under five chiefs.

Red Crow would not permit his followers to become fractionalized. Probably with the consent of his offshoot band chiefs, he appeared as the sole leader of the Fish Eaters, Six Mouths, Shooting Up, and Many Brown Weasels, totaling 304 persons, while his fellow "head" chief, Rainy Chief, appeared with his 51 members of the Hairy Shirts. Then, after the payments had been made, Red Crow pointed out that there were a number of men who should sign the treaty, but who had no bands. Obligingly, the commissioners permitted One Spot, White Striped Dog, and Moon, the chiefs of the three offshoot bands, to sign and be appointed treaty chiefs.

In these deft series of moves, the Fish Eaters and their supporters ended up with a full complement of chiefs but Red Crow gave the appearance of leading the largest single band in the tribe. With these kinds of statistics on the paysheets, Red Crow's position as primary head chief was henceforth unquestioned by government authorities, and the Fish Eaters remained the dominant group until the decline of the band system.

The practice of giving distinctive names to the various bands was not unique to the Bloods. It was popular among a number of other tribes, including the adjacent Blackfoot, Piegan, Sarcee, Gros Ventre, and Crow tribes. In most instances, the names were unique, coined as the result of an incident or characteristic. The only name that appeared to have common usage was Lone Fighters, which also existed among the Piegans and Gros Ventres. A distinctive feature of the Bloods was a tendency to name bands after the physical appearance of its members, i.e., All Black Faces, All Short People, All Tall People. None of the other tribes of the Blackfoot nation followed this practice.

There are traditions explaining the origin of most band names with the notable exception of the Followers of the Buffalo. All informants agreed that the name was "very old" and if it had been coined as the result of some event or incident, this had been forgotten. It adds support to the supposition that this band was the most ancient in the tribe and may even have been the core group from which all others had originated.

The Fish Eaters' name was derived from an incident that occurred when the group had wintered on the Highwood River. When spring storms prevented them from reaching the buffalo on the plains, they were forced to subsist on fish, even though the Blackfoot tribes abhored this form of food. Informants who were members of the band considered the name to be a tribute to the band's survival, but others believed it to be derogatory, similar to the Gopher Eaters of the Piegan (Many Guns, 1954, pers. comm.) and the Filth Eaters of the Crow (Lowie, 1917:53).

The three bands named after the physical appearance of its members (All Short People, All Tall People, and All Black Faces) were offshoots of the Followers of the Buffalo. The terms apparently were appropriate; Bull Back Fat, the primary leader of the All Short People, was a particularly small man, as was his brother, Little Ears, who took over in 1892. A descendent described Bull Back Fat as "the smallest of the chiefs, but he was tough and well known as a warrior" (John Cotton, 1954, pers. comm.).

Similarly, the All Tall People were named for their physical stature, with one informant stating that even the women were taller than average. This group was led by two brothers, Eagle Shoe and Morning Writing.

The All Black Faces were named because their leader, Morning Chief, had an exceptionally dark complexion. An offshoot of the All Short People, it was never close to the parent Followers of the Buffalo, and in 1880, when the members were moving to the reservation, its new leader, Day Chief, allied his band with the Fish Eaters. This action was rewarded eight years later when he was appointed head chief of the tribe on the recommendation of Red Crow.

Two other bands whose titles related to a phys-

ical condition were the Many Tumors and the Scabbies. The former was said to have been named because its members complained of feeling "living things" in their stomachs. Another version was that the name was derived from scabs in their mouths (Legal, 1897). The leader of the band was Medicine Calf, who was known to the Whites as Button Chief. He was an outstanding leader, and, at the time of settling on the reservation, he was considered to be the primary war chief of the tribe. He was particularly remembered as the only leader to try to negotiate a better deal for the Bloods at their treaty with the Canadian government in 1877. After his death in 1884, the band was taken over by his brother, Strangling Wolf.

The origin of the name for the Scabbies band is in doubt. According to one version, they were named because of a prevalence of skin diseases in the band, but another version states that the title reflected their laziness in producing poorly tanned (i.e., scabby) hides. A small band, it was under the leadership of Weasel Bull at the 1877 treaty and later was led by his son-in-law, Bull Shield. The Scabbies were constantly overshadowed by their parent band, the Many Tumors, and after they settled on their reservation, they gradually lost their identity to them.

Most band names were descriptive, often based upon some incident. For example, the Hairy Shirts were named because one of their members, Wood Traveller, wore a shirt made from the skin of a buffalo calf, from which the hair had not been removed. Led by Rainy Chief, it was said to have been the poorest band in the tribe and drew to it persons from other bands who lacked horses and could not keep up with the tribe's constant travels. Balancing the negative aspects of the band's economic status was Rainy Chief's reputation as a holy man. He was considered by missionaries to have been the first Blood leader to embrace Christianity, but informants claim he was simply trying to obtain some of the supernatural power that he believed the White man possessed. After the death of Rainy Chief in 1878, the leadership was taken by his eldest son, White Antelope, and the band later amalgamated with the parent Fish Eaters.

The Six Mouths, another Fish Eaters' offshoot, was named when its leader, Good Sun, received a revolver from traders at Fort Edmonton. When he returned to the tribe he said, "The Big White Chief in the north gave me this gun with six mouths" (John Low Horn, 1954, pers. comm.). One Spot became the leader after his father died and at thirty-one he was the youngest signer of the Canadian treaty.

Similarly, the Many Brown Weasels were always close to the Fish Eaters. The band was named because its leader, Moon, wore a brown weasel skin in his hair.

Another Fish Eater affiliate, the Shooting Up, received its name as a reflection of the disdain that others had for the group. The leader, Left Hand, had the reputation of being a rebellious and recalcitrant man who would not heed the dictates of his own tribe. On one occasion, when the Bloods were at peace with the Crees, Left Hand led a small party to attack that tribe. On his return, he was pursued by infuriated Crees; but when he tried to organize a large force to attack them, the elders forcibly restrained him. In anger, Left Hand showed his contempt by firing his gun in the air. As a result, his followers were dubbed the Shooting Up band. As the name implies, the band was not a popular one and during the reservation period it was frequently involved with interband squabbles. In the entire tribe, the Many Children was considered to be the most obstinate, with the Shooting Up following a close second.

The Bear People, another Fish Eaters' offshoot, would likely have qualified as another undesirable band had it survived to the reservation period. The earliest known leaders were brothers, Many Shot and Young Sun, and the name was reputedly given because so many of the members had the word "bear" in their names, i.e., Going to the Bear, White Bear, Bear Woman.

During the whiskey trading era in the early 1870s, the Bear People were notorious for robbing fellow members of the nation. In about 1872, they

killed a Blackfoot for his whiskey, and when members of another band mistakenly believed that their chief had been slain, they attacked the Bear People, killing many of the men in the camp. Many White Horses, a survivor and younger brother of the dead chiefs, became the new leader but most of the remnants of the band were absorbed into the Fish Eaters.

Among the Followers of the Buffalo offshoot bands, the Many Fat Horses was one of the oldest and, during the mid-19th century, one of the largest. The name was simply a reflection of the wealth of its members.

The earliest known leader was a man named Fish Child who relinquished the position to his brother Many Spotted Horses in the 1850s. During the winter of 1859–60, the band was torn with dissension when the retired chief became involved in a family dispute with another brother, Hind Bull, who was considered to be a subchief of the band. The discord finally erupted into a fight near Rocky Mountain House, in which the two brothers killed each other.

Many Spotted Horses, who was left as the sole chief of the band, was noted for his wealth in horses and by the size of his household. In 1855 he was said to have had twenty-three wives, keeping eleven in one lodge and twelve in another. At the 1877 treaty his family was recorded at ten women and thirty-one children.

With this personal following, Many Spotted Horses became more and more independent of the parent Followers of the Buffalo and when, in 1871, his band was involved in a bloody dispute with the Many Children band, he simply abandoned it and went to his mother's band, the Lone Fighters, where he eventually became their chief. Those who did not follow him went to the Many Children, and the Many Fat Horses virtually ceased to exist.

The Many Children, although an offshoot of the Many Fat Horses, appeared to have had more of an allegiance to the Followers of the Buffalo than did their own band chief. The Many Children were aptly named, for they were formed by a man named Not Afraid Of The Gros Ventres, who had ten wives and sixty children.

From the beginning, the Many Children had the reputation of being wild and unmanageable, not in a warrior sense, but in tribal and domestic affairs. The split with the Many Fat Horses occurred when a son-in-law of Not Afraid Of The Gros Ventres became a favorite of Many Spotted Horses and gained the jealousy and ill will of his brothers-in-law. One day, when he went to the Many Children camp, he was attacked by the family and before he was killed he had slain Not Afraid Of The Gross Ventres and two sons.

The ensuing scandal caused the Many Children, now under the leadership of a son named Running Wolf, to become alienated from their fellow Bloods. A year later, they became involved in a dispute with members of the All Tall People band, resulting in a number of deaths on both sides. A trader during that period commented (in Graham, 1956:17):

> At one time they numbered twenty-eight lodges, approximately between fifty and sixty fighting men. A feud broke out between them and another branch of the same tribe and at the time I speak of the [Many Chidren] had been reduced to two lodges and the survivors had taken refuge in the South Piegan camp.

They remained separated from the Bloods until the extermination of the buffalo forced them to settle on their reservation in 1880. As a result, Running Wolf was not at the Canadian treaty and was not recognized as a chief until a year after he had come home. And even after they were on their reservation, the Many Children were an unruly lot. "They were a wild bunch," said one informant (Harry Mills, 1953, pers. comm.), "and gradually they all got killed off, mostly by the Bloods themselves." "Even today," said another (Goldfrank, 1939), "the women in the Many Children band are like men and want their own way in everything. You can't tell them anything. They are wild and run with many men."

The Marrows, also a Followers of the Buffalo offshoot, was named because of their fondness for buffalo marrow. The only known leader was White Calf, who was also one of the leading war

chiefs of the tribe. He was a candidate for head chief in 1883, but, because of his warlike attitudes and his hatred for Whites, he was effectively blocked by the Indian agent. Two years later he attempted to amalgamate the remnants of the Followers of the Buffalo under his leadership, but again the action was not sanctioned. In disgust, White Calf, with a number of his followers, moved to the South Piegan Reservation in Montana in 1891. Although they later returned, the band had become so fractionalized that many of the members joined the neighboring Fish Eaters.

Another Followers of the Buffalo offshoot was the Knife Owners, a small group that had separated during the late nomadic period. At the nucleus of the band was its leader, Chief Standing In The Middle, and his eight sons. On one occasion when he was at a trading post, the leader bought new knives for all his boys and the band name was born. A small group, it remained relatively independent and for a time was part of the ill-fated Orphans band.

The Lone Fighters, one of the bands that was independent of both the Fish Eaters and the Followers of the Buffalo, had two of its leaders, Iron Collar and Calf Shirt, present to sign the 1855 American treaty. According to tradition, the band was named when Iron Collar returned from a successful raid after hearing complaints about squabbling within his band. "You have been calling us quarrellers," he said. "Very well, from now on we shall be known as the Quarrellers or Lone Fighters" (Jim White Bull, 1954, pers. comm.).

After the death of Iron Collar, Calf Shirt became the sole leader of the band during the 1850s and 1860s, after which time he was joined by Many Spotted Horses. Calf Shirt was an influential leader, but under the influence of alcohol he was so uncontrollable that he was nicknamed *Miniksi*, or "wild man." He killed a number of his own people while drunk, but his personal foibles were more than overshadowed by his tactical leadership in war. He was the foremost war chief of the tribe, and in 1865 he led a raid that wiped out the budding town of Ophir, Montana. After he was killed by whiskey traders in 1874, Many Spotted Horses became the sole leader of the Lone Fighters and signed the 1877 treaty on their behalf.

The Black Elks were the other independent band of the nomadic era. The origin of its name is in doubt, one informant claiming it was a variation of the name Elk Anus band, because its members preferred to eat the rear haunches of the animal. Others claimed the name was derived from black Hudson's Bay blankets or from a dark-skinned leader who wore an elkskin robe (Maclean, 1895:255).

The nomadic leader was Eagle Head, who was joined by the younger Blackfoot Old Woman and given chieftainship status after the 1877 treaty. Bitterly opposed to the Fish Eaters, Blackfoot Old Woman aspired to the official head chieftainship of the entire tribe but was constantly turned aside by Red Crow. He apparently had the support of the Many Tumors, Scabbies, and some of the Followers of the Buffalo offshoots, but not until 1907, seven years after Red Crow's death, was he finally given the coveted head chieftainship. During much of the reservation period, however, Blackfoot Old Woman was a de facto head chief and spokesman for the anti-Fish Eaters' faction on the reservation.

When the Bloods were forced to abandon their nomadic existence in 1880 and to settle on their reservation, they camped along a 25-mile stretch of the Belly River, just as though they were going into their winter quarters. This time, however, there was no spring departure, and as cottonwood cabins replaced leather tipis, the settlements took on an air of permanence. For the next twenty years, the reservation gave the bands a sense of structure and identity that had been unknown in the past. At the farthest point upriver were the Fish Eaters, followed in descending order by the Followers of the Buffalo, Shooting Up, Marrows, Many Brown Weasels, All Black Faces, more Fish Eaters, Lone Fighters, Many Children, Hairy Shirts, Knife Owners, All Tall People, Many Tumors, Scabbies, Black Elks, and All Short People. Later, when Day Chief was appointed head

chief of the downriver bands, he moved his All Black Faces to a location between the Knife Owners and the All Tall People, and when the Orphans were formed, they moved to the Knife Owners' camp.

Although the bands were no longer flexible in their movements, they were in their naming practises. Under new conditions, some of the bands received new names as fresh incidents occurred. The Followers of the Buffalo, whose name was outdated, became the Camps in a Bunch. The Many Children were renamed the Mules and later became the Small Robes, the Shooting Up became the Interfering, the Lone Fighters were the Middle Reserve People, and the Knife Owners were called Blocking the Road.

After the turn of the century, many families began to leave the confines of the Belly River to start their own farms and ranches, thus breaking up the traditional band structure. The new groups, usually made up of people from several bands, also received band-like nicknames, but these were usually based upon their geographical locations. These included the Big Corner Posts, the Deadman's Corner People, Shore People, and the Tall Trees. Of these, the latter seemed to embody best the humor or disdain so often found in earlier band naming practices, for the Tall Trees were located in one of the most barren and treeless areas on the Blood Reserve.

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Laced Coats and Leather Jackets: The Great Plains Intercultural Clothing Exchange

James A. Hanson

ABSTRACT

Focusing on events in the Northern Plains, this paper discusses the exchange of costume that occurred on the American frontier between Indians and the Whites with whom they came in contact.

A person is often judged by his dress. In our society, an astute observer might be able to ascertain from an individual's dress, his economic status, social and political attitudes, religion, profession, regional background, and a host of other details. Among nineteenth-century Plains Indians, tribal affiliation was recognizable by headgear, clothing decorations, and even the track of a moccasin. Within a tribe, there existed special ways of attiring one's self. Noted war leaders had special shirts or headdresses; holy men wrapped themselves in bizarre and mystical robes; foppish dandies wore intricately decorated outfits; wise councillors were clad in suits bestowed upon them by the White government; and wealthy status-seekers purchased dazzling and stylish cloth coats from the fur companies.

It seems that most people are attracted to foreign styles of dress. Both White and Indian found the other's clothing appealing; each adopted and adapted parts of the other's clothing for his own special use and with his own special meaning. This reciprocal interest apparently commenced with the beginning of contact. Among the first-known trade items supplied to American natives were textiles and finished shirts, hats, military jackets, and capes known as "matchcoats." In 1602, five years before the founding of Jamestown, two English explorers met a party of Indians along the coast of Maine. The native leader was wearing a "waist coat and breeches of black serdge, made after our sea-fashion, hose and shoes on his feet" (Ewers, 1976:102–103).

The clothing trade was transcontinental in scope. In 1787 on the Northwest Coast, the Tsimshian Chief Seax tried to exchange his clothing for that of the first White man to arrive in his waters, Captain James Colnett. Colnett presented the chief with pants, shirt, and a coat (Ewers, 1976:103). Even in the remote interior of Russian Alaska, an American explorer (Whymper, 1868: 222) observed:

> The leading men of the tribes assembled wore mock uniforms, presented them by the Hudson's Bay Company; old "Red Leggings" in particular, one of the Kotch-à-kutchin chiefs, was gorgeous in one with immense gilt-epaulets, brass buttons, and trimmings, and had as many coloured ribbons hanging from his cap as would stock ten recruiting sergeants for life.

This custom of "dressing the chiefs" apparently started early in Indian-White contact and was actively pursued by every government and trading company that desired success through diplomacy. The colonial superpowers in America (English, French, and Spanish) recognized Indian leaders and friends and presented them with

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medals of different sizes, certificates, and other gifts including quasimilitary coats. When the Spanish took control of the Mississippi Valley from France, they simply continued the French policies and told the tribes that the gifts of the two nations were the same and "no innovation is being made in anything" (Ewers, 1974:272).

The Spanish regime passed out medals, canes, coats, flags, and certificates to their allies west of the Mississippi. In 1787, there were nine laced coats for Missouri Basin chiefs on inventory in St. Louis (Wedel, 1955:148). Spanish presents for the Utes and Comanches included blue wool capes and coats "with red lapels for the big chiefs, three-cornered hats, and some medals" (Carroll and Haggard, 1967:135). The Mexicans continued the long-established tradition among the Southern Plains and Southwestern tribes. Travellers as late as 1850 frequently encountered Indians wearing blue or red Mexican coats with reversed facings (Barlett, 1965:119).

The United States policy after the Revolution followed that of Great Britain's in colonial times. Secretary of War Henry Knox told President George Washington that "the British Government had the practice of making the Indians presents of silver medals, gorgets, uniform clothing, and a sort of military commission . . . the Southern Indians are exceedingly desirous of receiving similar gifts from the United States. . . . The policy of gratifying them cannot be doubted" (U.S. Congress, 1851:60).

The young American nation's policymakers took General Knox's advice to heart and issued special presidential medals, certificates, and military coats. When the Corps of Discovery ascended the Missouri in 1804–1805, it carried several red coats with blue facings as gifts for the Indians. Meriwether Lewis and William Clark met the Brulé chief, Weucha or Shake Hand, in what is now South Dakota, and presented him with a flag, medal, certificate and beads, "to which we added a chief's coat; that is, a richly laced uniform of the United States artillery corps, and a cocked hat and red feather." The chief thanked them and remarked that the Spanish had given him a medal, "but nothing to keep it from my skin; but now you give me a medal and clothes," as had the English (Biddle, 1922:101–102).

The fur traders had a pressing need to maintain the good will of their customers. Established practice required a trader to make presents of liquor, clothing, or other goods to head men in order to secure the trade of their followers, embarrass the competition, and protect themselves and their property from physical harm. As an example of this custom, Robert Campbell at Fort William, North Dakota in 1833, mentioned giving the Assiniboine chief, Capot Bleu, a "blue chief coat shirt and breech cloth. He is well satisfied" (Brooks, 1964:27).

Cloth coats were typical among the Plains Indians by the beginning of the nineteenth century. Pierre-Antoine Tabeau remarked that among the Brulé Sioux in the period 1803–1805, "the clothes of both men and women are scarlet; the coats of the men are decorated in false gold, with a blue collar ornamented with silver" (Wedel, 1955:148).

Although governments and trading companies passed them out as gifts, chief's coats were a standard item of trade available at a set price. At St. Peter's River, Minnesota, in 1786, Sioux traders reckoned a fine scarlet coat at about $35.00, or two month's wages for the average fur company employee (Thwaites, 1892:94). Toward the end of their popularity in the 1850s, a chief's coat cost a style-conscious Teton warrior ten buffalo robes. A typical tanned robe was valued at $3.50, so neither inflation nor competition had changed the price of a chief's coat in half a century (Hanson, 1971:3). To give an idea of the importance of the fancy coats in the trade, the inventory for 1831 at Fort Union, North Dakota, is helpful: scarlet chief's, 47; blue chief's, 18; blue chief's common, 4 (Thompson, 1968:132). One Sioux trader the same year said his business was suffering greatly because he had no chief's coats or green blankets (Abel, 1932:345). Any Plains Indian who was important, or thought himself so, saw such a fancy cloth coat as the standard of

fashion. Far more colorful than the most decorative piece of native handiwork, it represented conspicuous wealth and cost him dearly. The chief's coat may have been popular as well because similar coats were worn by the military, whom Indians usually respected, admired, and occasionally emulated. It was probably, however, simply a human desire for chic fashion.

The chief's coat of the Plains became standardized in design and construction by the early nineteenth century (Figure 8). Basically it followed military frock coat lines with falling collar and knee-length skirt slit to the waist in the back. The whole garment was made gaudy with lots of polished buttons and yards of metal lace on seams, around pockets, under buttons, and across open spaces. Facings on cuffs, collar, and lapels were always in a contrasting color. Scarlet coats proved most popular, with indigo blue running a close second. For a time, parti-colored harlequin outfits were in vogue on the Upper Missouri (Maximilian, 1906:127, Donnelly, 1967:176, 182, 200, 226).

Very few of these chief's coats survive in museum collections. They passed from Indian fashion before extensive collecting of Indian artifacts

FIGURE 8.—Indian wearing "Chief's coat" as drawn by Rudolph Friederich Kurz at Fort Union, North Dakota, about 1851. (BAE neg. 2856:29 Misc., Smithsonian Institution, National Anthropological Archives, Bureau of American Ethnology Collection.)

was started. Collectors and even artists were biased against such European trappings and deliberately avoided them, generally seeking those items that they supposed or predetermined to be aboriginal. Some very late examples are in a few collections (the Museum of the Great Plains, Lawton, Oklahoma, has several Osage wedding coats) and possibly several exist as unidentified militia coats in military collections. George Catlin was one of the few professional artists to illustrate a man wearing a chief's coat, and he also collected an Indian copy of one.

Surprisingly, a few chief's coats, or at least pieces of them, have been recovered archeologically (Ewers, 1974:277). Oxidized or corroded salts from the decorative brass metal lace has in some instances preserved strips of cloth to which the lace was sewn. The writer has seen a virtually intact coat recovered by an amateur archeologist from an Iroquois burial. Major portions of one were found in Michigan (Brown, 1971:128–133) and still other significant discoveries of the remnants of these coats have been made in the riverine tribe villages of the Missouri. One recovered near Mobridge, South Dakota, appears to have been an indigo blue coat with red facings decorated with gilt buttons and matching lace (Wedel, 1955:146–147).

So widespread was their use that virtually every traveller in the pre-Civil War era mentioned chief's coats. South of the Platte in 1839, a St. Louis doctor, F.A. Wislizenus, encountered sixty Sioux warriors. "One of them wore a red English uniform, on which he prided himself not a little" (Wislizenus, 1969:56). Mountain man William Ferris met several hundred Teton Dakotas on the Platte in 1830. "They formed a semicircle in front of our position, and displayed four American flags. Many of them had on long scarlet coats, trimmed with gold and silver lace. . ." (Ferris, 1940:27). Prince Paul Wilhelm, Duke of Wurttemberg, said that the Otoe chief Shonkape "wore a red uniform and a three-cornered hat with feathers, looking very odd on an otherwise bare body." He also mentioned that at least two Iowa women were dressed in European coats (Paul Wilhelm, 1973:384, 321).

The organized fur trade declined gradually through the 1850s and many specialty goods for Indians, such as chief's coats, were phased out. The Indian Wars forced the warriors to spend their "furry banknotes" instead for better arms and more ammunition. Changes in fashion among Whites, and such phenomena as the Teton Dakotas' shift in preference from red and white cloth to blue and black, may have accelerated the chief's coat's demise. Furthermore, nearly every post-Civil War treaty with the Plains Indians, as well as many of the earlier ones, obligated the federal govenment to furnish clothing as annuity payments. A typical treaty stipulation stated that the government would furnish "each male person over fourteen years of age, with a suit of good substantial clothing, consisting of coat, pantaloons, flannel shirt, hat, and a pair of home-made socks" (Kappler, 1904:755ff., cited in Ewers, 1976:103). Civil War surplus generally filled the bill. One single order for the Teton Dakota in 1869 called for six thousand complete outfits, including shirts and hats. The outer garments were dyed black, possibly to prevent their theft and resale as regular surplus (National Archives, 1869). The hats were probably the black, straight-brimmed "pilgrim" hat (called the "Hardee" by the Army), which, along with braids, vest and moccasins, became the stereotypic dress of the early reservation Indian.

In a few places, clothing made by Whites for Indian use survives to this day. The Osages still purchase their handsome wedding coats from a band uniform manufacturer, and the Canadian government gives blue wool coats trimmed in scarlet to certain tribal leaders under its treaty obligations.

Some tribes have incorporated elements of early White costume into clothing of their own manufacture. The knitted and crocheted stockings made by Navajos and Pueblos are holdovers from Spanish colonial costume, and at least one tribe in Mexico, the Chamula of Chiapas, wears a modified eighteenth-century military coat as part of its festival garb.

On the other side of the ledger, the White men had a fascination for the Indian's suit of snowy buckskin garnished with beads and quills. Americans and Canadians who happened through Indian country readily bought coats, jackets, gloves, and moccasins. True Indian clothing on the back of a White man was, however, rare. Meriwether Lewis posed for his portrait in authentic Nez Perce dress. George Custer did likewise for a photographer at Fort Abraham Lincoln. Lt. Stephen Mills, commander of a company of Chiricahua scouts, donned genuine Apache shirt, breech cloth and tall boots to help establish his affinity, and Frank Cushing of the Bureau of American Ethnology (Figure 9) was often photographed in Indian clothing as he added to the romance of anthropology. Generally, however, the White customer wanted something dashing, elegant, and well-fitting, but still "frontiersy." The result was a garment following the current White pattern, even to pockets and lining, and then handsomely decorated by Indian methods.

A survey of specimens in museum collections indicates that the buckskin garments for White consumption generally followed contemporary White fashions (Figure 10). Thus, coats made before the Civil War have long, full, knee-length skirts and fitted waists similar to the frock coat of the period. Three early collar styles were: the regular suitcoat type with lapels, a shirt-type collar with rounded points (both of which copied civilian fashion), and a straight stand-up collar style, which probably was derived from military coats.

After the Civil War, vests became popular. The jackets became shorter and buckskin shirts (actually light jackets) came into vogue. The regular shirt collar and shirt yoke are frequently encountered as are the bibbed "fireman's shirt" popular at that time. Some coats during this period have shoulder-length capes, which may be an adaptation of the eastern hunting shirt design, or more probably, an inspiration from the cape used on the army overcoat.

The post-Civil War outfits exhibit other interesting design characteristics. Many show extensive use of pinking irons and shears to decorate edges. Pockets are frequently sewn on the outside, using the shape as decoration. Instead of fringe being located as a welt in seams, it appears on yokes, around collars, sleeves, pockets, and cuffs, a vast increase over its use in the earlier days. Brass military buttons are also very common.

Some frontiersmen swore by buckskins, while others swore at them. Rudolph F. Kurz felt that leather was far superior to cloth for roughing it. He found it "more serviceable for life in the bush and on the prairie and . . . better protection against sun and mosquitoes when one is on horseback" (Hewitt, 1937:134).

To the contrary, the English sportsman John Keast Lord who spent twenty years, beginning in the 1840s, on the Plains and in the Rockies, said: "This style of dress is decidely showy and picturesque, and having said so much of it, I have exhausted everything that it is possible to say in its praise." He stated that buckskin was heavy and not warm. When wet it was like "damp tripe," and drying it was laborious with the stiff result being akin to armor. Buckskin was impossible to clean, and shrinkage always occurred, even from perspiration. The leather "steals away from wrists and feet"; pants became knee breeches and "the sleeves modestly retire to the regions of the elbow. . . . Never wear leather if you can help it." Such was the snobbery of an English Lord. He finally admitted: "if nothing better can be obtained, there is no other course left open than that of wearing leather or going *à la sauvage*. . . . Buckskin . . . is the material most hunters, trappers, and traders, whether white or red men, use for their suits of clothes" (Lord, 1867:139).

Perhaps this writer's personal experience will resolve this dichotomy. Buckskin clothing is very uncomfortable when damp; but if heavily smoked, sewn with welted seams, and greasy from long use, it is relatively water repellent. It does become stiff and brittle, and it shrinks and stretches to a remarkable degree. However, high winds and insects do not penetrate it. It is superb for an outer garment in really frigid temperatures

FIGURE 9.—Anthropologist Frank Cushing in Zuni costume. (Photograph by John K. Hillers, 1880 or 1881, BAE neg. 22-E Portraits, non-Indian, Smithsonian Institution, National Anthropological Archives, Bureau of American Ethnology Collection.)

FIGURE 10.—White man wearing buckskin suit as drawn by Rudolph Friederich Kurz in 1851. (BAE neg. 2856:22 Misc., Smithsonian Institution, National Anthropological Archives, Bureau of American Ethnology Collection.)

and it lasts much better than cloth in brush.

Who wore these tailored outfits? They were procured by fur traders, mountain men, frontier scouts, Army officers, show people, and even the Indians themselves.

The fur company employees apparently stuck to civilized dress while on duty, for several reasons. First, the companies made a nice profit selling clothing to their employees. Second, a company tailor was usually on hand or nearby for proper fitting or repairs. Third, company officers felt that "White" dress was more appropriate than Indian dress. Kurz (in Hewitt, 1937:134) quoted Edwin T. Denig as feeling that "Indians take pride in procuring for themselves clothes according to our mode and have an ambition to appear dressed as white men, because they regard our garments more fashionable and expensive. A white person in Indian costume inspires no especial respect among tribes; he rather lowers himself in their estimation." Clearly, the Indian admired the White trader greatly for his technology and very little for his ability at Plainscraft.

Denig also said that another principal reason for not adopting Indian garb was the very real danger of being mistaken for a member of an enemy tribe and being killed. There was a "shoot first and ask questions later" ordinance in effect those days, and Denig realized that friendly cur-

iosity was not a virtue on the Plains. Kurz believed this was the real reason for Denig's refusal to wear buckskins (Hewitt, 1937:134). To support Denig's contention, there is the statement of an Army scout concerning events the day following the Battle of the Little Bighorn. "De Rudio and O'Neil saw a large number of riders going up the valley, made out that one of them was wearing buckskin clothes, and were sure that they recognized him, and De Rudio shouted: 'Tom Custer! Wait!' The answer to that was forty or fifty shots. . ." (Schultz, 1926:148).

When the time came for the traders to head for home, it was a different matter entirely. As Kurz put it, "the 'Mountaineer' costume, in which they array themselves in St. Joseph and St. Louis, they have made before their departure for the purpose of distinguishing themselves. Such suits of clothes are made up and sold at Fort Pierre" (Hewitt, 1937:134). The implication is that these may have been tailor-made, and probably kept as regular stock. After demolishing buckskin as suitable attire, Lord added, "my remarks, be it understood, only apply to brush life—visiting, or doing the swell *enroute* is altogether another affair" (Lord, 1867:141). Many fur company people, such as Henry Boller and Auguste and Charles Chouteau, acquired Indian outfits. Most of the real working traders, however, posed for photographs in broadcloth suits.

It was also possible to get a frontier suit without the trouble of going upriver. At least one enterprising merchant in the 1830s and 1840s supplied a wide range of Indian curiosities to his St. Louis customers. J. Deaver, proprietor of the "Emporium," advertised moccasins and beadwork from the Hudson's Bay Company, wolf robes from the Rocky Mountains, a Blackfoot chief's scalp, and great quantities of quilled and beaded pouches and medicine bags. In the clothing line, he offered "ten doz. Indian moccasins, superior quality, also a few Indian coats, porcupine work." Deaver advertised on one occasion that he had "just received from Red River [Oklahoma] a few splendid Indian coats, made by Cherokee Indians, also a few mockasins. . . " (*Missouri Republican*, 1839, 1840). These coats were probably of the caped, knee-length variety, popular among the Five Civilized Tribes. A remarkably fine example, given to the governor of Texas about 1854, is on exhibit at the Alamo in San Antonio.

The mountain men—the rustic beaver trappers who braved Blackfeet and blizzard to harvest our first exploitable resource—uniformly adopted buckskin for use in the field, unlike the traders. Once again, even though a garment was made by some Crow or Shoshone maiden, its pattern was almost always European. Mountain man Lewis Garrard said that when his cloth trousers wore out, he bought Indian leather and took it to John Smith. The talented Cheyenne trader cut out the pieces following Garrard's old pants and Smith's wife sewed them with sinew. While the tailors were busy, Garrard watched, maintaining decency by wearing a leg from his old trousers as a breech cloth. He laconically reported, "I made a very respectable looking savage" (Garrard, 1938:173–174).

Trousers could be obtained as Garrard had obtained his, but they also were available in buckskin, tailor-made with fringed seams, at every major trading post and at most dry goods stores around St. Louis (Thompson, 1968:132; Townsend, 1978:11). Lord observed (1867:139) that "the 'pants' are made similar to those usually worn in civilized lands. Both trousers and jacket are elaborately fringed. . . . Sometimes beadwork and stained porcupine quills are used to increase the ornamentation."

Most mountain men could probably wield an awl and sinew with considerable dexterity. John C. Fremont's accounts indicate that some were semiprofessional cobblers who regularly furnished moccasins at a dollar a pair (National Archives, 1842–1890). Rufus Sage (1887:155) noted that trappers usually made their own moccasins, using the foldover side seam pattern.

A third group associated with leather garments on the frontier were the Army scouts and emigrant guides. The real old-timers like Kit Carson and Jim Bridger usually posed in store-bought outfits, while the johnny-come-latelys, such as Tom Tobin, Joe Meek, Mariano Modena, and Jim Baker, swathed themselves in a welter of

sashes and beadwork. Some scouts, such as Big Bat Garnier and Little Bat Pourier (who wore the knee-high "breed" legging) were mixed bloods or married to Indians, so an elegant costume probably increased their prestige with relatives and in-laws. As well, what Army officer could resist hiring such a dashing personal guide? It would make for delightful local color in his memoirs. What company of emigrants could doubt the knowledge of a man so obviously in tune with the wild country ahead?

Following close to this was the endless array of charlatans, showmen, and yarn spinners who milked public credulity for years after the last wild bison was gone. William F. "Buffalo Bill" Cody posed in full buckskins while he "gunned down" the Cheyenne chief Yellow Hand nightly in his "Wild West Show," even though at the actual event Cody was wearing a Mexican vaquero's outfit made of black velvet (Sell and Weybright, 1955:111, 118). A host of others—Annie Oakley, "Deadeye" Dick, "Deadwood" Dick, "Diamond" Dick, and even "Buckskin" Jack—donned the fancy, if fanciful, attire to make their humbug believable. Even such men as Dan Beard, founder of the Boy Scouts of America, and Teddy Roosevelt could not resist the romantic appeal of fringe when facing the camera.

Of all the groups, Army officers serving in the West undoubtedly led the field in acquiring fancy pseudo-Indian costumes, as well as other Indian "curiosities." Perhaps they did so as a tangible indication of interest in the natives, but more probably it represented a merging of the trapper's reason (practicality) and the trader's reason (romance and public attention). Meriwether Lewis was probably the first American officer to return with an Indian outfit. In 1820, a fur trader had Army tailors make knee-length buckskin hunting shirts, high-waisted buckskin trousers, and other cold-weather gear for riflemen with Stephen H. Long's Yellowstone Expedition (Meriwether, 1965:55–56). When the Marquis de Lafayette visited St. Louis in 1825, General William Clark gave him an Indian-made coat, "a garment bearing a striking resemblance to a Russian riding coat," as a souvenir. Lafayette's secretary described it as "made of buffaloe skin, prepared so as to retain all its pliancy" (Ewers, 1967:57).

FIGURE 11.—George Armstrong Custer in buckskins about 1868.

Photographs show that the custom of buckskin clothing in the field was popular everywhere; one taken in 1874 of the Royal Engineers Relief Force accompanying the U.S.—Canadian Boundary Commission pictures several fringed jackets (Parsons, 1963:66–67). We all know Custer wore a buckskin coat (Figure 11), and his wife Libby said he usually wore fringed buckskin breeches (Custer, 1961:86). In fact, many of the officers who died with him wore some article of Indian manufacture.

Due to artists' interest in accurately depicting the battle of the Little Bighorn, we know how a great many of the soldiers were dressed. Custer

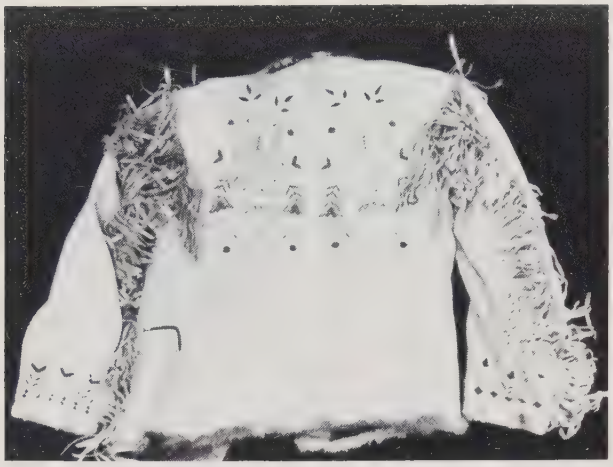

FIGURE 12.—Buckskin jacket worn by Captain William Ludlow on the Black Hills Expedition, 1874. Made by Arikara Indians about 1872. Courtesy U.S. Military Academy Museum, West Point.

wore a whitish gray hat with broad brim and rather low crown, and a buckskin suit with a fringed welt in the outer seams of the trousers and arms of the blouse. The double-breasted buckskin blouse featured military buttons, open lapels, a turn-down collar, and fringe along the bottom. His brothers, Tom and Boston, were similarly dressed. Several of the remaining officers wore buckskin blouses. Lt. James E. Porter's bullet-riddled jacket was found in the abandoned hostile village, and Captain Tom Custer's buckskin jacket was recovered later, indicating that they wore the coats into battle despite the summer heat. The body of Lt. Donald McIntosh was also clad in buckskins (Parsons and DuMont, 1953:49–51; Hutchins, 1976:16).

It is unfortunate that no such detailed information exists regarding the dress of the host of other soldiers who served out West (Figure 12), although the United States Military Academy Museum has some remarkably fine buckskin outfits that belonged to Army officers on frontier duty, and old photographs bear out their popularity as field dress. Assumedly, Custer's officers were no more or less dashing and picturesque than those in other regiments.

The final group brings us full circle. When this project was undertaken, it seemed that the garments under consideration were probably made by Indians for Whites. The literature indicated that some of them were made by Whites for Whites. It is now evident from photographs and specimens that some Indians also wore these European adaptations of native material as well. Two notable examples are Curley, Custer's Crow scout, and Red Cloud, the Oglala Sioux chief of chiefs. Both were famous national figures. Both played important roles in tribal and White cultures. Perhaps in their minds it was desirable to retain a certain "Indianness" in their attire to satisfy White curiosity seekers and officials, as well as conservative Indians. At the same time, the elegance of decoration on their clothes may have accurately reflected their enhanced social status and wealth. It seems that Indians faithfully copied European fashion, even when that fashion was derived from their own dress (Figure 13).

The tradition of Indian-made clothing for Whites continues. It is strongest in Canada, where high-quality tailored jackets made by native craftsmen in a variety of styles are available from Pointe Bleue, Quebec, to Teslin Lake, British Columbia. A few are made in the United States. In 1969, the writer received a beautiful buckskin jacket as a gift from an Oglala Sioux friend. The Indian received in return a new Stetson cowboy hat, so the traditional exchange of clothing is still viable.

With regard to the ornamentation of the type of buckskin garments under consideration, it is worthwhile to note that typical Plains geometric beadwork was observed on only two examples. Decorations, if present, consisted of variations on floral themes in beads or quills applied directly to the leather with no other background. The individual design elements were often somewhat larger and naturally more colorful when done with beads, with the beads usually being of very fine size. Areas decorated generally include the breast, back yoke, pocket flaps, and collar and cuffs of coats. On trousers, the designs usually appear in the front pocket area, down the leg fronts, the cuffs, and the calf area of the back of the leg.

A controversy exists as to whether this floral

FIGURE 13.—Oglala Sioux Chief Red Cloud in European style dress, 1900. (BAE neg. 3238-C Oglala, Smithsonian Institution, National Anthropological Archives, Bureau of American Ethnology Collection.)

appliqué tradition was the work of mixed bloods, especially the Canadian Métis (Howard, 1972:16; Brasser, 1976:37). Certainly the quality and quantity of production of this style of decoration, as well as the skillful creation of the garments themselves, suggest highly acculturated craftsmen, but whether they were Indian or mixed blood is not clear. It is possible that the Saulteaux, acculturated Chippewas in the employ of the Hudson's Bay Company, played a role in the development of this design tradition on the Plains. They were relocated from the Great Lakes to the Manitoba prairies, and their floral designs may have caught the eye of the western frontiersman and Plains Indian as well.

Since Cherokee and Canadian Indian items were being marketed very early in St. Louis, they could have influenced Plains designs. Still other sources to consider, when discussing the western floral tradition that still exists among the beadworkers of the northern Rockies, are the Iroquois and other eastern tribes who migrated westward. For example, several Iroquois women and girls, the wives and daughters of beaver trappers, were taken prisoner by the Crows about 1822 and held for several years, perhaps permanently (Paul Wilhelm, 1973:328). Could they not have taught their beadworking designs and techniques to their captors? We also note the specific remarks of J. Goldsborough Bruff, a Forty-niner who visited the former Hudson's Bay Company factor at Fort Hall, Idaho (Read and Gaines, 1949:102):

> Grant is a Scotchman . . . and quite courteous, for an old mountaineer. His wife is an Iriquois. . . Her handywork,—of bead embroidered articles are very ingenious and beautiful;—pouches, sashes, mocasins, etc. etc. adorn the apartment, or office of her husband. I enquired if he had any of them to dispose of, but he said no, all spare things of that kind had been sold.

What influence did her work have upon the Shoshones and Bannocks who were at Fort Hall almost daily? How many other Iroquois women went West and introduced new and important ideas of craftsmanship to the Plains, Plateau, and Mountain tribes?

In conclusion, the intercultural exchange of clothing was virtually universal. The Indians saw White garments as carrying social prestige and economic status. Some Whites used Indian clothing for practicality, but most wore it as a label of individualism. Wearing buckskin was also an obvious statement of sensationalism, and these reasons were not really different from the reasons Plains Indians wanted chief's coats.

As an afterthought, one wonders how badly artists, writers, and film makers have misportrayed the Indian Wars. In reality, the fellows in the Army clothes were the Indians, while the chaps wearing buckskin were the soldiers. How confusing it must have been!

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The Wichita Indians in the Arkansas River Basin

Mildred Mott Wedel

ABSTRACT

The lifeway, material culture, intertribal relationships, and history of Wichita-speaking peoples in the Arkansas River basin are synthesized from sixteenth to eighteenth century Spanish and French documents. Changes in Wichita culture resulting from European contact are then discussed.

ACKNOWLEDGMENTS.—I wish to express gratitude to Jane Walsh of the Department of Anthropology, Smithsonian Institution, for her help in the translation of primary Spanish documents. I am responsible for the French translations.

Introduction

The Wichita Indians who lived in the Arkansas River basin in the 16th to 18th centuries are the focus of interest in this paper. I shall present them as they appeared to European visitors at three different times during that period, one that many would consider precedes reliable memory history. Facts relating to geographical location, lifeway, and sociocultural and religious concepts have been extracted from manuscript and published records so that for the first time comparisons of particular features can readily be made. The carefully evaluated documents have been studied from an anthropological viewpoint. This accords with the ethnohistoric method as I define and use it (M. Wedel, 1976:3–4; M. Wedel and DeMallie, 1980:110). Those who advocate the use of this approach stress its importance for studies of cultural change. This viewpoint will be substantiated when I consider the changes reflected in the synchronic descriptions within the 200-year period and suggest reasons for them.

The documents consist of firsthand accounts of visits to the Wichita in the period 1541–1601, in 1719, and in 1748–1749. This descriptive material has many lacunae since it is in some cases only a response to interrogations by European officials seeking facts on limited problems or, in others, a presentation of information considered important to plans for future trade. It does not convey the genius or vitality of the Wichita lifeway. We do not sense, for instance, the concepts by which the Indians integrated their lives with their environment and each other, nor the binding forces of their rituals and ceremonialism, nor the detailed variety of their everyday lives. However, the scraps of information are precious, because, except for archeology, they are our foremost sources for knowledge of the Wichita in these centuries.

Interpretation of the records used here has recognized that all of them were written from an ethnocentric viewpoint. That is, the European authors were insensitive to many aspects of Indian life. Much that they witnessed, they did not correctly comprehend. When interpreters were used, there was abundant opportunity for a still different kind of misunderstanding, especially when a series of interpreters were employed as in 1719. In addition, a knowledge of the history of

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the period has often clarified certain statements that at first glance are bewildering.

The Wichita in the 1500s

The Wichita were first described by members of two Spanish expeditions seeking gold and silver, which went from New Mexico to an area called Quivira. One was led by Francisco Vásques de Coronado in 1541; the other by Juan de Oñate in 1601. Although these two journeys were separated by 60 years, the resulting descriptions of the Quivirans and of the routes followed to reach them are similar enough to justify the conclusion that in both cases the same region and people are indicated.

It has been proposed and generally accepted that the Quivirans were Wichita-speaking Caddoans. They were extensively tattooed as the Wichita are known to have been in later historic times; they lived in tall grass houses typical of those built by later Wichita; and two of their settlements and/or subdivisions had names that identify with 18th-century Wichita band names. Hereafter, I shall use the term "Wichita" to mean the Wichita-speaking Caddo and "Wichita proper" for the band to which that name was originally restricted.

The following descriptive information pertaining to the 1500s is derived from documents based on firsthand observations made by the two expedition leaders, by two men who accompanied Coronado to Quivira (Smith, 1857:147–163), and in addition by those who testified both in the 1544 hearing conducted to determine what cruelties Coronado perpetrated upon Indians during his 1540-1542 journey northward (*Información*, 1544), and in the 1602 official inquiry conducted by Don Francisco de Valverde into the accomplishments of Oñate the year before (Hammond and Rey, 1953, 2:836–877). Twenty or more years after the Coronado *entrada*, Pedro de Castañeda de Najera (1596) composed a relation, which contained firsthand knowledge of the Coronado trek onto the Plains, but only secondhand data on the region of Quivira.

In the 1500s the Wichita appear to have been living northeast and possibly east of the Great Bend of the Arkansas River, an area which was bounded on the north by the Smoky Hill River and is now within the State of Kansas (Figure 14). Herbert E. Bolton's (1949:427–428) on-the-ground reconstruction of the Coronado route based on documentary data, led him to this location and later was corroborated by archeological investigations conducted by Waldo R. Wedel. More specifically, the 1541 party (Smith, 1857:160) found the Wichita living along two small tributaries of the Arkansas, probably Cow Creek and the Little Arkansas River (W. Wedel, 1942:12; 1959:585–587). Coronado then led his slow-moving troops for four or five days to what was described as the "end of Quivira" (Smith, 1857:160), where there was a larger river than the previous ones along which settlements had been seen. This is usually identified as the Smoky Hill. Identification of Oñate's specific destination is less satisfactory, although his presence in the same region is generally accepted. Bolton (1916:260) suggested this Spaniard found Quivirans on one of the same tributaries as did Coronado, while W. Wedel (1942:18–20) has proposed that a location farther east near present-day Arkansas City, Kansas, near the mouth of Walnut River, should also be given consideration. "Other people," presumably Wichita, were reported in 1601 (Bolton, 1916:261–262) to be living "due east" down the Arkansas. To judge by the known geographical extent of the Great Bend Aspect archeological materials (those that W. Wedel (1959:571–589) has proposed include the cultural remains of 16th-century Wichita), they were not living east of the Walnut River basin or south of the modern Kansas-Oklahoma line.

In both 1541 and 1601 the Spaniards were impressed by the large population in Quivira (M. Wedel, 1979:187). There are many hazards involved in making an estimate of their number based on written records. With this in mind, Newcomb and Field (1967:341) conjectured that the population of all Quivira would fall between 15,000 and 33,000. These people were described

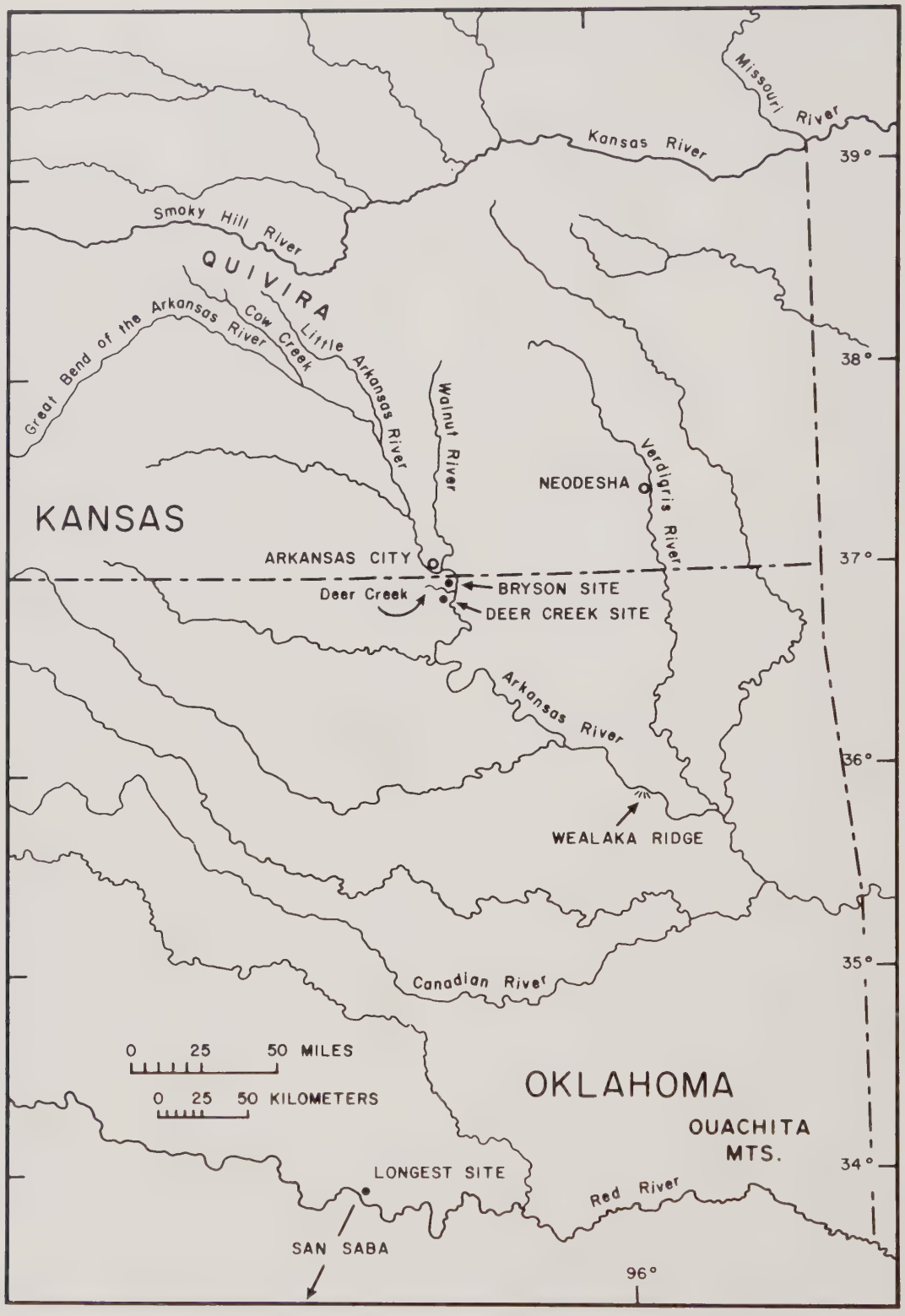

FIGURE 14.—Range of Wichita Indian Settlements, 1541–1750s.

as physically large; some of the men whom Coronado had measured were ten palm-spans, that is over 6 feet (or about 1.8 m), in height. Both men and women were extensively tattooed, with the women's faces, as described by Coronado (Pacheco and Cárdenas, 1865:366), looking more like those of the Moors than Indians.

The area occupied by these Wichita was west of the Flint Hills within the Central Lowland physiographic province. Spaniards, who viewed with pleasure the well-watered and fertile land in July 1541, noted the availability and abundance of wild plums, grapes, mulberries, nuts, "flax," and a number of herbs.

No other Indian territory impinged closely upon that of the Wichita. To the north at some distance lived friendly Pawnee, for whom the Wichita evidently used the pan-Caddoan term *Awa:hi*, rendered by the Spaniards *Harahei* or *Arahe*. The *Guas* (Castañeda de Najera, 1596:123) possibly Kansa according to linguist Robert L. Rankin (University of Kansas, pers. comm.), who were characterized by the Wichita as enemies, may have come from as far away as the Missouri River to attack. To the southwest, in today's Texas panhandle, the Spaniards in 1541 encountered *Teyas*, who were friendly to the Wichita and may have occasionally wintered near them (M. Wedel, 1979:190). Others such as the then roving, tattooed *Escanjaques* (Hammond and Rey, 1953, 2:841), possibly Tonkawa-speakers, whom the Spaniards met nearer Quivira, were fierce enemies. They and the Wichita were said by Baltasar Martínez in 1602 to kill and eat each other (Hammond and Rey, 1953, 2:843), presumably ceremonially. The possible presence of Wichita slaves (M. Wedel, in prep.) in 1541 at Pecos, New Mexico, would have resulted from hostilities between these and other Indians in the more southern Plains. Described war paraphernalia of the Wichita included the bow and arrow, war clubs, and shields.

Two Wichita settlement or band names are linked with the farthest region of Quivira in Coronado-related documents. Jaramillo wrote (Smith, 1857:160) in 1542: "We arrived at what was said to be the most remote part of Quivira, to which they had taken us saying it was of much importance, expressing this by the word *teucarea*." He added that this was also the most heavily populated region of Quivira. Under interrogation in 1544, Domingo Martín (*Información* 1544, testimony 4) told of the assassination of the Indian, *El Turco*, "in a pueblo called *Tabas*," an event which Jaramillo reported (Smith, 1857:160) occurred in the "most distant place" to which Coronado's party went.

Although Bolton (1949:293) equated both *tabas* and *teucarea* with the *taovayas*, i.e., Tawehash, today's linguists do not. David S. Rood (University of Colorado, pers. comm.) states that from a linguistic point of view, "I would unhesitatingly identify [*teucarea*] with the Wichita name for the Towakoni, *tawa:khariw*." On the other hand, linguist Rood would accept Bolton's argument for *tabas* equating with Tawehash. Therefore, if Jaramillo can be trusted, it would seem that both of these Wichita bands were living just south of Smoky Hill River. The importance of *teucarea* may have resulted in part from their being considered, then and later, the foremost band of the Wichita. The concentration of population may have reflected the presence of the two subdivisions in the region and the fact that the Tawehash, at this time and later, composed the largest band. The Wichita who lived on Arkansas River tributaries in 1541 and 1601 are unidentified.

The settlement pattern was one of extended communities composed of a number of house clusters or hamlets (M. Wedel, 1979:183–186). The dwellings were "grass houses" (Newcomb, 1961:255–256) like those the Wichita continued to build in later times. Jaramillo (Smith, 1857:161) described many as round, and Martínez in 1602 (Hammond and Rey, 1953, 2:844) added that they were 70 to 80 feet (21 to 24 m) in circumference, indicating a diameter of 22 to 24 feet (6.7 to 7.3 m). Oñate estimated (Bolton, 1916:260) they were "two spears" in height. Martínez further described them, according to Hammond's translation, "as built of small poles stuck in the ground close together and brought

together at the top in the shape of a pavilion." The poles were the thickness of an arm, Juan de León testified (Hammond and Rey, 1953, 2:857). He perplexes modern readers by mentioning a central pole toward which the others converged. Is he describing an unfinished structure from which the center ladder pole had not yet been removed? To the horizontal fiber lacing of the framework, bunches of grass were attached "that came down to the ground like a wall" (Smith, 1857:161). Mats woven of withes and grass covered the doorways (Hammond and Rey, 1953, 2:845), which were so low the Spaniards had to enter on their knees. Once inside, they saw around the edge *canicos* (*canizos*?), probably meaning framed platforms (Bolton, 1916:260), otherwise described as "barbacoa beds" (Hammond and Rey, 1953, 2:857), that were "about the size of the rope beds in Castile." These frames had poles laid across them (Hammond and Rey, 1953, 2:844–845) and occupied one-half to one-third of the interior space.

Other structures were near the houses. The Spaniards' need to describe features for which they had no ready term, together with mistranslation by historians unfamiliar with likely constructions, has clouded and confused interpretations of their form and purpose. Of particular interest were platform structures on which small rooms were perched, covered with dried grass as were the dwellings. They were reported by Oñate (Bolton, 1916:260) and León (Hammond and Rey, 1953, 2:857) to serve for storage of corn. Movable wooden ladders led to their small grass-mat doors. Upon observing Indians sitting and lying in the doorways, Martínez (Hammond and Rey, 1953, 2:844) and Oñate suggested the granaries also provided a cool refuge from the summer heat. Jaramillo (Smith, 1857:161) may have described a similar structure, but if so, less clearly, for he does not specifically note its elevation on poles or the presence of ladders. Seeing no corn stored in it, he likened the feature to a *capilla* (chapel?) or sentry box. Again, however, Indians were seen lounging in the doorway. An acceptable translation of this passage does not necessarily indicate that the feature was attached to a house, as George P. Hammond (Hammond and Rey, 1940:305) implied in his translation, but instead states that it was adjacent.

In the settlement visited by Oñate, Martínez (Hammond and Rey, 1953, 2:846) saw fields of maize in the spaces between houses and wrote that "some extend beyond them, but not far enough to be out of sight." There were also a few gardens planted to beans and small "calabashes," a term that could indicate squash, pumpkin, or gourds. Oñate (Bolton, 1916:759) commented on plum thickets between planted fields. Was this a natural growth or a "fence" of Indian contrivance?

Although the Spaniards were favorably impressed by the horticultural activities of the Wichita and were eager to benefit from the harvest, they give the impression that the Indian economy rested chiefly on products of the hunt, particularly of bison. Oñate wrote that these Indians utilized bison in large numbers, and Martínez described bison meat as "their principal and best sustenance." They were said to use small bows and short black arrows (Hammond and Rey, 1953, 2:874). In documents relating to both 1541 and 1601, it was pointed out that Wichita clothing was made from tanned buckskin and bison hides, and it was considered worthy of mention by both Diego de Ayarde and Miguel Montero de Castro (Hammond and Rey 1953, 2:884, 881) that some Wichita wore hide shoes.

Coronado, as he approached Quivira in late June, came upon a small group of these people hunting along the Arkansas River upstream from their settlement. Women were present who presumably prepared the meat and other animal products to carry back home. There is no mention of dog transport and in 1601 no indication of horse possession. Oñate (Bolton, 1916:261) commented: "It is incredible how many [bison] there are in that land."

The main cultigen was maize, two crops of which were raised annually, according to Juan Rodríguez (Hammond and Rey, 1953, 2:867) and Oñate who observed further (Bolton, 1916:261) that the stalks of the first crop that had recently been harvested were as tall "as that of

New Spain and in many places even higher." The plants of the second crop lately planted in holes were already a palm-span (about 6 in or 15 cm) in height. Two varieties are known to have been planted annually by the Hasinai Caddo in the late 17th and 18th centuries (Swanton, 1942:129–131) and possibly earlier.

Maize was observed stored not only in the platform granaries, but in piles on house floors and by Rodríguez (Hammond and Rey, 1953, 2:866) in underground caches (*silos*). Inside the houses (Hammond and Rey, 1953, 2:845) Martínez saw stone metates the size of two "bricks" laid side by side, with a small mano on top. Circular breads made from maize flour were said to be baked under ashes (Smith, 1857:152). They were as "big as shields" and three to four fingers thick. Both dried and roasted maize were seen. Wild fruits and nuts were also in evidence.

Jars and jugs of brownish clay were observed (Hammond and Rey, 1953, 2:857) by León. No metal other than a copper pendant worn by a Wichita chief in 1541 was seen by those who had undertaken the long journey to Quivira in search of gold. Beads of perhaps shell or bone were thrown at Oñate (Bolton, 1916:259) in what he described as a gesture of friendship.

Little is learned about the social structure of the Wichita from the 16th to 17th century Spanish visitors. Some ranking of bands was implied. A few tantalizing facts suggest a more highly organized society than was characteristic of Plains Indian groups, possibly reflecting Caddoan ties. The Indian Miguel reported (Hammond and Rey, 1953, 2:874) that the Wichita settlement visited by Oñate had two chiefs, one of more importance than the other. The one with whom Oñate dealt was called *Catarax*, as the term was rendered in Spanish. Taken hostage by the apprehensive Spaniards, he remained calm and ordered his villagers to do likewise. "It is remarkable," Oñate wrote, "how they obeyed him and served him." Martínez noted (Hammond and Rey, 1953, 2:844) that in evidence of his rank "whenever he was asked a question, he always asked his companion to answer." He carried a staff as a symbol of his authority. Each grass house was large enough to hold eight to ten people (Bolton, 1916:260) who were probably the members of a matrilineal, matrilocal family.

Up to 1541 the Wichita lifeway had been untouched by European influences. One of the earliest contacts between a man who may have been a Wichita and the Spaniards involved the Indian called the Turk (M. Wedel, in prep.) by these Europeans. At Pecos, New Mexico, he had described to Coronado and his gold-loving men a people who had metal who lived to the east of Pecos on a wide river, presumably the Mississippi. In that area, he evidently had seen copper worked (*Información*, 1544:testimony 3, 8) and made into various articles. There is the interesting possibility that he was an entrepreneur who moved from one Indian group to another, carrying on a lone trading operation, as did Wichita individuals in later times.

The Wichita in 1719

In 1719, over a hundred years after Oñate's visit, two Frenchmen, Jean-Baptiste Bénard, Sieur de La Harpe, and Claude-Charles Dutisné, visited other, but different, Wichita villages and soon thereafter recorded their observations. The purpose of these visits was to consummate alliances that would permit the establishment of trade between French colonies along the Mississippi River and New Mexico, as well as the intervening Indian people. Most of the following descriptive data are drawn from a copy of the 1718–1720 journal of Bénard de La Harpe, and from his compilation of the 1720s, the *Journal Historique de l'Établissement des Français à la Louisiane* (a shortened title used for the Boimare, 1831, published edition). The rest of the data comes from a letter written by Dutisné to Louisiana Governor-General Jean Baptiste Le Moyne de Bienville that with two of his *Relations* were incorporated into La Harpe's daily journal (folio 21 verso). The original of this 1718–1720 journal has been destroyed or lost.

By this time a Wichita migration southward within the Arkansas River basin had occurred, which apparently left no settlements near Smoky

Hill River. However, there are indications that in the 1680s some Wichita were still in that most northern region of old Quivira. Robert Cavelier de La Salle owned two Indian slaves in 1683, a boy called a *Pana* who was probably a Wichita (M. Wedel, 1973:212–213), and a *Paneassa* woman presumably of another Wichita band. The boy's people were said to live in two villages, which, from the paraphrased description, could refer to a location on the Smoky Hill. The 1684 *Carte de la Louisiane*, drawn by Jean-Baptiste Louis Franquelin (in Thwaites, 1896–1901 (63):frontispiece), using data provided by La Salle, records "10 Villages" of *Paneassa*, but in such a generalized way that it is unclear if these hamlets were near the Smoky Hill or farther south. After 1699, maps based on secondary information were still portraying Wichita as living in scattered hamlets just northeast of the Great Bend, but also in villages farther south along the Arkansas, usually on its left hand side, occasionally on the right.

A good case can be made for Bénard de La Harpe finding the 1719 village of the *touacaro* (the 1541 *teucarea*) on a terrace today called Wealaka Ridge (1718–1720, folio 19), near Leonard, Oklahoma. It is on the south side of the Arkansas River below present-day Tulsa. This results from an on-the-ground tracing of the route taken by La Harpe when he went northwest from his Red River post (M. Wedel, 1978:14–15) to meet at the Tawakoni village with Wichita and other Caddoan groups. The retracing of his course was made in 1972 (M. Wedel, in prep.) by myself, Waldo R. Wedel, Larry Banks of the U.S. Army Corps of Engineers, Dallas, and for a short distance by Quintus Herron of the Museum of the Red River.

Dutisné, in his turn, went to one of two villages about 2.5 to 3 miles (1.5 to 1.9 km) apart. Following his route description, one is led from an Osage village on Osage River to a location near the Verdigris River (W. Wedel, 1959:533; M. Wedel, 1972–1973:155–156) in the vicinity of today's Neodesha, Kansas. I have elsewhere proposed (1981:31–32) that the inhabitants of these villages may have been *Taovayas*, i.e., Tawehash Wichita. Dutisné used for them only the imprecise terms *panis*, *pants*, and *paniouassa*, thus signifying Wichita but no more.

Bénard de La Harpe named the *Toayas* (the 1541 *tabas*), or Tawehash, in his 1718–1720 *Journal* (folio 19) but provided no settlement location for them. In the *Journal Historique* written a few years later (in Boimare, 1831:208), he stated that they lived forty leagues north of the *touacaro*, which could refer to the Neodesha locality.

He was told (1718–1720, folio 20) that the Wichita proper (first noted in 1718 on a Guillaume Delisle map) and *Yscanis* were living "60 leagues north-northwest" of the *touacaro*. This may refer to the Deer Creek tributary region, Kay County, Oklahoma, where archeological remains similar to those of the Quiviran Great Bend Aspect occur, or to a locality farther upstream, nearer Walnut River, for instance. No home locality is given in the same *Journal* (folio 19) for the *adeco* or *honecha*, who apparently comprised other Wichita bands. The daily journal, the 1720 La Harpe-Gavengeau map (M. Wedel 1981, fig. 10), and the *Journal Historique* produced in the 1720s considered together reflect understandable confusion on La Harpe's part as to exactly where the unvisited Wichita settlements were to be found.

Reasons for the southward move out of Quivira are unexplained. Perhaps an answer is to be found in an examination of Wichita relationships with their neighbors. For instance, some of the Pawnee to the north were now looked upon as enemies by the Wichita. It was the Skiri who in the 1670s had first captured La Salle's *Pana* slave (M. Wedel, 1973:204). A friendly alliance still existed with others, possibly those later known as South Bands. The Missouri were termed enemies. "Seven important villages" of the Arikara were remarked upon by the Wichita, but the basis for this knowledge was unrecorded. Relations with the Osage were described in Bénard de La Harpe's 1718–1720 journal as hostile, but in the *Journal Historique* (Boimare, 1831:208) as cautiously friendly. The accuracy of the latter view is born out by the Osage who dared to enter a Wichita village at night to warn of Dutisné's approach and by the presence of a *Mento* (Wich-

ita) trader (M. Wedel, 1972–1973:162), possibly a *touacaro*, in an Osage village when Dutisné was there. On the other hand, this Frenchman reported that the Osage stole horses from the Wichita.

The Apache, called *kinnes* by the Wichita (Rood, pers. comm.), a term spelled *cancy* by La Harpe, were the most hated foes. Dutisné commented (Bénard de La Harpe, 1718–1720, folio 21 verso) that the two Indian groups "waged a cruel war, even eating each other." This La Harpe also learned when a Wichita chief explained regretfully that they had eaten 17 Apache at a public ceremony a month before, so that only one remained as a gift for the Frenchman. *Padouca* may have been the name used by Bénard de La Harpe (1718–1720, folios 19 verso–20) to indicate the Comanche. By 1719 they had appeared on the western horizon of the Wichita and were considered enemies, but meetings seem to have been sporadic. Evidently the *Escanjaques* were no longer a menace. The Kansa are not mentioned.

The Caddo on Red River south of the Ouachita Mountains were said to know little of the Wichita. The few *Canicons* just down the Arkansas from the Tawakoni were friendly neighbors.

To judge from the preceding information, the Wichita were still in control of a large segment of the Middle Arkansas River in 1719. They were, however, more on the defensive than a century before, due evidently to hostile Missouri-Platte River Indians, such as the Skiri and Missouri. Even with the move of some bands southward, all of these Wichita remained in the same physiographic province they occupied in the 1500s, where the same wild food plants, birds, and animals were available.

It is somewhat surprising that tattooing was not mentioned by either Frenchman. Since in later years, and as we have seen in former ones, this feature of their appearance was considered notable, it must have been something already familiar to both men. The Indians who assembled at the Tawakoni village were said to speak different languages, indicating probably different band dialects.

By this time most hamlets had consolidated into villages or towns. The houses were like those described by the Spaniards—tall, dome-shaped, characterized by their cover of straw and reeds. La Harpe observed (Boimare, 1831:214) that "Above his door, each chief of a nation [Wichita subdivision] has his coat-of-arms painted on a circular piece of hide [evidently miscopied "copper" in the 1718–1720 journal, folio 20], some representing the sun, some the moon, or the stars, or some others different animals." Arbors such as those used by the Caddo proper (M. Wedel, 1978, fig. 2) were adjacent to the houses.

The only population figures available for 1719 are those provided by Dutisné when he estimated there were 200 to 250 warriors in each of the *panis* villages he described. Using a multiplier of 5, this would indicate 1000 to 1250 people in each village. This agrees with the projections of 1040 to 1300 people, derived from a calculation using Dutisné's estimate of about 130 dwellings per village, and the figure of 8 to 10 people per house given by Oñate and Marcy (U.S. Congress, 1854:77). If these were *Taovayas*, they constituted, according to Bénard de La Harpe (1718–1720, folio 19 verso) the largest Wichita band.

Wichita economy was still based on a combination of hunting and horticulture, along with root-gathering and use of wild fruits and nuts. A semi-sedentary living pattern was described by Bénard de La Harpe when he wrote (1718–1720, folio 20) that the Indians "leave all their villages in the month of October to go on the hunt from which they do not return until the month of March in order to sow their corn, beans and calabashes (squash?) which they eat in the summer." Had he known of a corresponding summer village hunt, it would be expected he would have mentioned it, since it would have had significance for traders. However, because he did not, one still cannot confidently assume there was none. In 1541, Coronado had found most of the Quivirans in their villages when he arrived unexpectedly in early July.

There is no reference in 1719 to elevated granaries. Perhaps they were too vulnerable to enemy raids when villages were deserted during hunts of several months.

The winter hunt was facilitated by the horses the Wichita now possessed, Spanish mounts usually obtained by raiding. Dutisné estimated there were about 300 horses in the two villages near the Verdigris, indicating that a substantial proportion of the 450 warriors still did not own any. This deficiency explains in part the high esteem in which the animals were held.

The principal game hunted, aside from land and water fowl, continued to be bison, deer, and bear. To the same list of cultigens given by the Spaniards, La Harpe added tobacco. When ripe, the plants were pounded between two stones (Boimare, 1831:213) and made into flat loaves for future use.

Of all the Wichita divisions, the *touacaro* were reported to La Harpe to be the most respected, evidently the highest ranking band. It was a *touacaro* "chief" who, having been informed of La Harpe's imminent arrival, led a group of "chiefs" to meet the approaching visitors some distance from his village. After demonstrations of friendship, he and the Frenchman made speeches and participated in a feast consisting of "cornbread mixed with some squash (*giromont*) and smoked meat" (Bénard de La Harpe, 1718–1720, folio 19). La Harpe was then helped onto a fine horse which he rode almost to the village, a new form of processional which utilized the esteemed animals. Here he dismounted so that two prominent men could carry him on their shoulders, their faces turned toward the ground, to the dwelling of the "chief." This was the documented oldtime manner of bringing an honored guest before the head chief of a Caddo settlement.

After the Frenchman was placed on a bison robe on a wooden platform, presumably shared with the chief, a number of principal men encircled him and each put his hands in those of La Harpe to indicate friendship. A gift exchange followed with La Harpe receiving an "eagle feather crown," probably the headdress style characteristic of Southeastern and Caddo Indians, one distinct from the popularized Plains headdress with the feathered trail. He was also given two feathered "calumets," perhaps pipestems only, one signifying war and one peace. He characterized them as the most valuable present the Wichita could give.

Dutisné, in contrast, sent no representative ahead to the *Taovayas*, if such they were, and was greeted with hostility. Ultimately he succeeded in setting up an alliance and was ritually fed by the chief at the accompanying feast.

Only a few of the status symbols of chieftainship were noted in 1719. La Harpe observed that the assembled head chiefs were almost always surrounded by men of rank who were eating, smoking, or playing games. When food was brought to the *touacaro* chief he ate some, then shared the rest. He was described as unmarried with the privilege of calling for any woman he desired.

The calumet ceremony was the highlight of Bénard de La Harpe's visit (1718–1720, folio 19). Dutisné was not so honored. Ceremonial dancing and singing lasted for almost two days and a night, with the leaders, the elderly *Yscanis* and *Taovayas* head chiefs, manipulating the calumets "with infinite skill." They extolled the advantages of the alliance being consummated. On the second day, La Harpe was carried to a seat under an arbor where his head, hands, feet, and stomach were washed (Boimare, 1831:211) and his face painted blue and red. He received presents of thirty bison robes, rock salt, tobacco cakes, verdigris, ultramarine, and a young Apache slave. The Frenchman in return gave presents of European trade goods valued at nearly 1500 *livres*. This would indicate a rather thin spread of trade items. One wonders if any reached people below those of high rank.

La Harpe was unsuccessful in learning much about the religion of the Wichita. As a result of Indian reticence, he decided (1718–1720, folio 20 verso) that "they have little of it," preferring bodily pleasures. He was informed, however, that they recognized a Great Spirit, which they venerated under different forms, and it was to this being they presented the first fruits of the earth. Then he was told further of a black man with horns who loaded the dead into a large pirogue taking those who had been good to a bison-filled prairie and the others "who have not been war-

riors and have served their nation badly" (1718–1720, folio 20 verso) to arid country.

To turn to material culture, the Wichita had evidently added a native-made lance to their weaponry (M. Wedel, 1972–1973:157) since the 1500s. They were said to make hide armor for themselves including vests and breast-plates capable of deflecting arrows, and additionally now, armor for their horses. They carried hide shields. Since travel was on overland trails, they had no pirogues. A feather fan, perhaps a bird wing, was used (Bénard de La Harpe, 1718–1720, folio 19) to keep insects away. Waterproof woven-reed platters were admired. No use of native or imported metal was reported.

The surprised reaction of the *Touacaro* head chief to the nominal amount of trade goods presented by La Harpe at the welcoming ceremony adds to a conviction that as yet the Wichita had not received a notable quantity of these items or even a few with regularity. Dutisné counted six guns in the Wichita village of 200 or more warriors. While La Harpe was on the Arkansas, a Chickasaw Indian with a backpack of trade goods arrived from the Yazoo River region, probably directed by Carolina Englishmen desirous of projecting their influence into French-claimed territory. The peddler could not have provided many articles at a time. They would have supplemented a few items that occasional French traders provided or that were carried in the travels of individuals like the Mento (Wichita) chief, whom Dutisné had met at the Osage village and with whom he had traded at Natchitoches, French Louisiana, a few years earlier. In the orations made at the calumet ceremony, it was emphasized that this alliance (Bénard de La Harpe 1718–1720, folio 19 verso) would particularly benefit the Wichita in that the French now would bring firearms for their protection and various other merchandise.

The Wichita in 1748–1749

Some 30 years after La Harpe and Dutisné visited the Wichita, deserters from the colony of French Louisiana passed from Arkansas Post on the Mississippi River to Spanish New Mexico by way of two Wichita villages lying on the west side of Arkansas River. They had hoped to find in Spanish territory a more congenial environment in which to make their livelihood. Four of these men, three soldiers and one professional hunter, mistakenly called traders by some writers, were interrogated after their arrest in 1748 and 1749 in New Mexico. Their testimonies, taken by Governor Tomás Vélez Cachupín, are to be found in *Provincias Internas*, vol. 37 of the Archivo General de la Nación, Mexico City (see M. Wedel, 1981, app. A).

The questions put to these men were primarily designed to obtain information on the extent of French influence and settlement in the Mississippi Valley. Nonetheless, the replies give some idea of the Wichita situation. Scraps of information from other contemporary documents supplement that acquired from the testimonies. Even then the data on the Wichita at this time are very limited.

The men described only the two villages they visited. According to their recorded locations, they may be identified with the Deer Creek and Bryson–Paddock archeological sites (M. Wedel, 1981:5) lying just over 1.5 miles (2.5 km) apart in Kay County, Oklahoma. Pottery, suggestive of the Great Bend Aspect of the Kansas or Quivira region, many stone and bone native-made artifacts, and an abundance of French trade goods are found there in association. For the first time, a village fortification may be described, consisting of what has been interpreted as a stockade and ditch system (M. Wedel, 1981:59, 61) with some kind of openings in the stockade through which guns could be fired. Although the description implies that the entire village was fortified, only part may have been as was the situation at the later *Taovayas* (Longest site) village on Red River (Parilla, 1763; Treviño, 1765).

The inhabitants of the villages were called by the deserters both *Panipiqués*, that is, pricked or tattooed Pawnee or Caddoan-speakers, and *Jumanos*, a name given by Spaniards to the Wichita. These they unquestionably were. Probably they were mostly *Taovayas*. As in the 1500s, their streaked appearance, resulting from extensive tat-

tooing, was thought worthy of special comment. It is likely that *Yscanis* and Wichita proper were also in the region, but their exact geographical relationship to the *Taovayas* is never specified. About 1750–1751 it was reported (M. Wedel, 1981:46) that a Wichita village, decimated a few years previously by measles and smallpox, had recently been totally destroyed by the Osage. Neither its band identification nor specific location is known, but it was surely not the Deer Creek or Bryson–Paddock villages. The population of these two settlements was variously estimated as between 1500 and 2500, figures not dissimilar to those projected for the villages Dutisné visited. There is the likelihood, however, that with Wichita re-grouping during 30 years, such a comparison is unfruitful.

In the interim between 1719 and 1748, the Tawakoni had moved into Spanish Texas. According to members of an Osage war party who in 1742 visited a camp of André Fabry de La Bruyère on the Canadian River (M. Wedel, 1981:32), these Wichita had moved to that stream c. 1737, soon thereafter to Red River, and then farther south seeking protection from hostile raids. The Osage had become determined, aggressive enemies and were probably responsible in part for this move. Simultaneously, however, French officials at Natchitoches were offering enticements to these Wichita to enter that trading sphere.

The Osage were also keeping the more northern Arkansas River Wichita involved in frequent hostilities (M. Wedel, 1981:46). The *pananas* were said by the deserters to be Wichita enemies, but it is not made clear if this meant all Pawnee. In 1752, however, an alliance was reported between Wichita, *panana*, Comanche, and later *Ae*. There are hints this alliance was inspired by the desire for increased intertribal trade, but cooperative counter-action against the Osage (M. Wedel, 1981:47) may have been a consideration too. There is almost no evidence of its effectiveness or duration. It may have been an ephemeral arrangement.

A longer-lasting alliance had been set up between Wichita and Comanche, circa 1746–1747, according to the deserters. It permitted peaceful trading activities, but these appear from slender evidence (M. Wedel, 1981:42–44) to have been extensive for only two or three mid-century years before the Wichita moved from the Arkansas River. It resulted also in at least one joint attack upon the Osage. It made possible a safe journey westward for those who testified in Santa Fe.

The Wichita were seen as "very warlike," with all four deserters commenting on the continuing custom of eating parts of enemy captives. Felipe de Sandoval, the Spaniard, observed them receiving Indian slaves from the Comanche. It is apparent not all were traded on to Europeans by Wichita traders. Frequent lack of powder and lead for bullets restricted the use of guns. In fact, Sandoval thought the Indians were not very skilled in their use. Indications are, therefore, that the gun was still not the principal weapon.

The deserters' testimonies contain no data on the sociocultural aspects of Wichita life. The Indians are dubbed "pagans." The typical grass houses are again described as in 1541, 1601, and 1719, but no other objects of material culture are mentioned.

The native economy described in the 1500s and in 1719 had been supplemented by a French hunting enterprise (M. Wedel, 1981:44–46), which was headquartered in the two Wichita villages. Here, it was reported, the Indians and perhaps some Frenchmen now lived the year around. Professional French hunters were seeking meat, tallow, and bear oil to supply the domestic trade of the lower Louisiana colony, as well as Caribbean Island and overseas trade. They enlisted the cooperation of the Indians in their project: the men in providing horses and hunting with them for bison, deer, and bear, and the women in helping to process the animal products. This included preparation of hides, preservation of meat by drying and presumably salting, and rendering of tallow and bear oil. Although, in return, the French gave trade items to the Indians, these villages were not functioning as trading posts in the usual sense of the term. The quantity of trade goods must have fluctuated considerably since their availability to French

hunters and traders during the 1740s and 1750s, a period of alternating international war and peace, vacillated accordingly. These Wichita may have been the beneficiaries of a notable amount of trade goods only in the years 1750–1752 (M. Wedel, 1981:46–48), when many more ships arrived from France than ever before and when Arkansas River traffic was less subject to Osage Indian attack than previously.

Possession of a number of horses made it possible to bring back the large quantity of meat necessary to satisfy the French hunters, an amount far exceeding that formerly required for village sustenance only. It has been proposed (Steen, 1953:187) that in connection with the cooperative enterprise, more butchering may have taken place in the villages themselves than at the kill-site as before. The Wichita procured their horses from the Comanche, both in group and individual trading sessions and also through raids on Plains Apache and Spaniards.

By 1753 this joint enterprise seems to have been dissolving. With the development of the French and Indian War in 1754, shipping was again endangered, causing trade items to be in short supply. Firearms were by order restricted to French military forces. In addition, Indian warfare was more and more drawing the Wichita away from hunting game beyond their personal needs. They were also distracted (probably with French encouragement) by the proposed Spanish protection of the Plains Apache at the San Saba mission and presidio. By 1758, all the Wichita remaining on or near the Arkansas River apparently had left the region (M. Wedel, 1981:48) that had been their homeland for at least 250 years and had moved south to Red River. Here they were greeted with pleasure by Frenchmen based in Natchitoches who hoped for their cooperation in confining the Spaniards to the region south of that river.

The Wichita, 1541–1750s, A Changing Lifeway

From the viewpoint of the Wichita, their life in the 1500s must have been quite satisfactory. This documentary review has shown, however, that it altered in numerous ways in the following two centuries. It is true that certain distinctive cultural traits are recorded as persisting, especially those that may have been of some antiquity and that were shared with the Caddo proper, such as tattooing, grass houses, and, of course, linguistic family. The environment of their shifting settlements was also unchanged until moves were made in the 18th century to Red River and farther south, where this study does not follow them. The economy of horticulture and hunting, supplemented by gathering, continued to prevail even after it was overlaid with a French professional hunting activity in the 1740s and early 1750s.

Two subdivisions of the Wichita, namely the Tawakoni and Tawehash, are documented through the period examined. The *Yscanis* and Wichita proper may have been present but unrecognized before 1719. This may also be true of the smaller Wichita groups named by Bénard de La Harpe which, however, were unrecorded afterwards as well, presumably because of their merging with other Wichita-speakers. A band settlement pattern consisting of a set of two villages near together is documented in 1683, c. 1699 on a Marc Bergier, S.J., map (M. Wedel, 1979, fig. 1), in 1719, and 1748–1749.

The changes occurring after the 16th century that are explicitly documented or implied include a shift in settlement locations and pattern; a move from raiding to more intensified warfare; variations in intertribal relations and in the Indian slave trade pattern; modification of hunting procedures; acquisition of horses, the lance, and European trade goods; the spread of European diseases; possible introduction of certain rituals as well as a new religious concept; adaptation of an old ceremony to new conditions. To what can these changes be attributed? Almost all seem to result in a variety of ways from the presence of Europeans in New Mexico and the Mississippi Valley. An interpretation of the recorded changes (limited always by the scope of documentation) becomes a case study of the multipronged influence of Europeans over 200 years on this southern prairie-plains Indian people.

Unfortunately, a paucity of pertinent docu-

mentation does not permit one to obtain a particularized and coherent view of how the 16th-century Caddoan-flavored, but bison dependent, lifeway of the Wichita became more oriented in the following centuries toward that of the Plains Indians.

Therefore, let us examine with greater care some of the changes stimulated by Europeans, that were recorded. In the 1500s the Wichita though aggressive appear to have been living in comparative peace well beyond European influence. The raiding-type hostilities in which they and their enemies engaged (Newcomb, 1976:11) did not prevent certain bands from maintaining residency just south of Smoky Hill River. The situation evidently altered in the next century when Indians living some distance to the north and northeast inveigled Frenchmen with firearms, who had taken up residence among them, to join in assaults on their gunless foes, assaults that were probably aimed at procuring horses and slaves. There is documentation (M. Wedel, 1981:34) for destructive attacks on the Wichita for a few years at the end of the 17th century. The chief culprits may have been those called enemies in 1719—the Missouri Indians and certain Pawnee. In 1693, the French formed a trading alliance (Thwaites, 1896–1901, 64:161, 169) with the Missouri, their friends of a decade, who were living in what is now central Missouri on the river of that name. This may have led to a series of cooperative war expeditions like those reportedly made to the Wichita the following year. In 1700 when Frenchmen were living and intermarrying with Pawnee (C. Delisle, [1702]) on the Platte River, Apache Indians told Spaniards (M. Wedel, 1981:34) that an entire Wichita village had been "destroyed" by Frenchmen, meaning probably an Indian-French party. Some of the horses the Pawnee already possessed (M. Wedel, 1973:205) may have been stolen earlier from the Wichita. This joint warfare appears to have eased when French traders, having become aware of these Plains Caddoans, began to view them as prospective trade associates. By this time, however, the bands that had lived on Smoky Hill River up until the 1680s or 1700 had moved to more southern positions in the Arkansas River basin. Their longterm penetration northward on the Plains had been checked with the help of French guns.

The Wichita, having become aware of the benefits of French trade, may have located their new villages that were recorded in 1719 with an eye to acquisition of more European items. Their thinking on this is neither stated in documents nor readily apparent. Did those near the Verdigris expect to benefit from trade directly with the French or through Osage middlemen? Had the Tawakoni set up a village on Wealaka Ridge hoping to place themselves where French traders or Indian entrepreneurs from Red River might regularly contact them?

The new settlements were no longer composed of hamlets like those the 16th and early 17th century Spaniards described. Instead, their inhabitants had joined together forming large villages, presumably for greater security from gun-bearing enemies. By the middle of the 18th century, thus at the end of the 200-year period under study, it had evidently become necessary to fortify villages to some extent.

What 18th-century warfare patterns had brought this about? Hostile Indians to the southwest never seem to have been a severe threat to Wichita villages. Some, like the pedestrian *Escanjaques*, may have caused temporary flight from Quiviran hamlets when at times they raided gardens and the stored food reserves, but they were not responsible for permanent abandonment in historic times. In the 16th century they and probably other Indians on the southern Plains showed their animosity chiefly by capturing Wichita to trade as slaves to Pueblo Indians.

In the latter half of the 1600s, the Apache became the leading enemies of the Wichita in that southwest region, trading the captives they procured to Spanish colonists now living in New Mexico rather than to Pueblo Indians. The increased mobility of the Apache, mounted by this time on Spanish horses, created more opportunities for hostile encounters with the Wichita. The latter, on their part, found raids on the Apache a good way to increase their precious horse herds.

I have seen no record of the Wichita passing Apaches or other captured Indians directly to the French in Illinois, but some of their captives may have been reaching Frenchmen in 1716–1718 at Natchitoches where Dutisné had purchased Indian slaves (M. Wedel 1972–1973:161) from the *Mento* (Wichita) trader. Nevertheless, a number were still being killed and eaten ceremonially at this time, and even later in 1749 when the Comanche were trading Indian captives to the Wichita in exchange for French trade goods.

The Comanche, who were unmentioned in the Coronado and Oñate documents, were perhaps as *Padouca* called enemies by the Wichita in 1719, but there is no evidence of destruction of villages. After these Shoshoneans had displaced the Apache northeast of New Mexico, a reversal of the relationship with the Wichita occurred. This was signified by the alliance made about 1746–1747 that was still in effect when the Wichita moved to Red River a decade later. This partnership, and the more temporary alliance of 1752, which included also *panana* and *Aé*, were developments uncharacteristic of the Wichita in earlier historic times, probably because they were unnecessary. These alliances have often been attributed to French manipulation, but there is no firm evidence (Newcomb and Field, 1967:256–257) for this viewpoint. In fact, some considerations (M. Wedel, 1981:42–44, 47) make it highly unlikely. On the basis of known evidence, I would agree with W.W. Newcomb, Jr., and W.T. Field in thinking the alliance of the 1740s to have been a native arrangement sparked by a desire for European commodities, particularly horses, mules, and guns as available, for their own use or for a middleman trade. This alliance also led to joint Comanche-Wichita war parties, and, only incidentally it seems, allowed safe passage for those Europeans who crossed from the Wichita villages to Comanche settlements and on to New Mexico. The later short-lived alliance of 1752 was probably similar in nature.

It was the Osage who took more concentrated warfare to the Wichita in their villages after 1719. At first it may have related to Osage uneasiness provoked by French traders who, in the 1720s, sought to bypass these Siouans in order to trade directly with the Wichita for horses. Later, when the Osage took over the horse trade with the Illinois and Louisiana French, the Indians needed to constantly replenish their supply, one source of which was the Wichita herds. In addition, there is some reason to surmise that in the maneuvering of the Franco-British conflict of the 1730s and 1740s, the Osage were sometimes set upon the Wichita (M. Wedel, 1981:41), e.g., when the latter harbored Indians sympathetic to the British. No doubt other factors were involved that are not readily apparent in the records. The severity of the attacks by better-armed Osage evidently strongly influenced the Wichita subgroup living on the Verdigris River to move west, and afterwards, affected the Tawakoni decision to migrate south into Spanish Texas. It was later reported that the Osage completely destroyed a Wichita village. By this time, those remaining at the Deer Creek and Bryson-Paddock sites, having apparently fortified themselves to some extent, were enlisting the help of their Indian allies in their punitive attacks. Undoubtedly, Osage harrassment contributed to the final resolution of these Wichita to leave the Arkansas River basin.

In review, the fluctuating patterns of alliance and hostility, the changing nature of warfare, and the population movements recounted above are seen to have resulted from various stimuli traceable to the European: namely, competition for gun and horse possession, the Indian craving for all kinds of trade goods, Indian jealousy of the extension of French trade to more distant Plains tribes, the Indian slave trade, the rivalry of European nations for control in North America that utilized Indians as pawns in the power plays. Many of the factors listed above were contributing simultaneously to warfare elsewhere in the Plains.

The ever-increasing amount of time and energy that was apparently expended in the late 17th and 18th centuries on a warfare more destructive than the earlier raids made for family revenge, for horses, for honors, and so on, must have had its effect on various sociocultural aspects of Wichita life. It is unfortunate that information of this

nature is not to be found in documentary sources.

Horses, introduced into the southwest by Spanish colonists, altered the Wichita life style in a number of ways other than in generating hostilities. There is no evidence these Indians had horses in 1601, but prior to 1683, according to La Salle's *Pana* slave (M. Wedel, 1973:205), they had come into possession of "many" Spanish mounts, using them for war, transport, and the hunt. Just how this development changed hunting and butchering practices is undocumented, although it is obvious that use of the horse would have permitted longer journeys and the transport of heavier loads. Horses would have been essential to the mid-eighteenth century French-directed hunting activity in the Deer Creek vicinity.

They were probably a factor in the shift from numerous extended-family hunts such as those carried on near Quiviran hamlets in early historic times to the seasonal community hunts of several months duration that were recorded later as characteristic of the Wichita lifeway when the Wichita were living in large villages.

The animals were also used ceremonially when a horse procession was combined in 1719 with the older pedestrian form of initial meeting and welcoming ceremony. To what appears to have been an old pre-horse, leather armor tradition for warriors was added a native-made, Spanish-style leather hat for riders (M. Wedel, 1973:205) and leather protective gear for horses. Moreover, an Indian-made form of lance, an imitation of the typical weapon of mounted Spaniards, may have been developed when the horse was adopted (M. Wedel, 1972–1973:157). Horses quickly became an intrinsic part of Wichita life.

The elaborate initial meeting and welcoming ceremonies, organized for notable visitors and described by Bénard de La Harpe, were probably abandoned in large part betwen 1719 and 1748–1749, when Frenchmen were in and out of Arkansas River Wichita villages with some frequency and friendly Comanche were making many informal visits. Regretably, the formalities attending the formation of Indian alliances are unreported.

The La Harpe description of the 1719 calumet or pipe ceremony performed for him by the Wichita is, I believe, unique in writings about these people and has a special importance for students of that ceremony. When Alice C. Fletcher prepared her monograph on the calumet ceremony, which she called Hako (Fletcher, 1904), she presented the Chawi [Grand Pawnee] version. James R. Murie, whose mother was a Skiri, wrote in his work "The Ceremonies of the Pawnee" (1981, 1:154) that that version included "a number of Wichita songs that are not in the Skiri ritual." George A. Dorsey (1906:52n.) was told in the early 1900s that the Skiri attributed the ceremony to the Wichita. Earlier, he (Dorsey, 1904:17) had written that the Wichita themselves claimed it began with them. Conversely, however, Murie (1981, 1:154) noted also in his study that the Skiri said they had originated it, as still other tribes have been heard to do.

It may be that the Chawi did indeed borrow the ceremony from the Wichita, but whether they in turn had taken their version from someone else or possibly had evolved it from a more generalized widespread Plains ceremony is a moot question. Nor have we any idea when, before 1719, it became a part of the Wichita ceremonial roster. The apparent paucity of contacts with the French before that date would make a European part in a possible borrowing questionable.

On the other hand, the devil concept certainly smacks of European missionary influence, Spanish perhaps, and may even have been derived from Father Juan Padilla who returned to Quivira soon after accompanying Coronado there. The ritual joining of hands recorded also in 1719 seems more European then Indian.

As to the acquisition of articles of European make, the Wichita no doubt obtained some from the 1541 and 1601 Spanish expeditions and others from scavenging the victims of the Gutièrrez de Humaña expedition of about 1594. By 1719 they had received items of metal and glass from French and British sources as well, apparently not in quantity, but enough to make the Indians covet more. Trade goods were undoubtedly one of the

effective enticements dangled before the Tawakoni by the French on Red River in persuading the Indians to move south in the 1730s. The supply of European items for those remaining on the Arkansas River increased at times in succeeding decades, but the arrival of traders was unpredictable. The Wichita must have enjoyed their first great wealth of trade items circa 1750-1752 during the French hunting activity when, between European wars, the French Louisiana ports were crowded with ships of the trans-Atlantic and Gulf trade. At the beginning of the French-Indian war in the Ohio River valley in 1754, this bonanza ended (M. Wedel, 1981:47–48). So, when the last of the Wichita left the Arkansas River basin, the highly-regarded trade items had not yet supplanted many native-made stone and bone artifacts or pottery, if the archeological evidence from Deer Creek and Bryson-Paddock sites is being correctly interpreted.

Once the Wichita received European trade goods, their appetite was whetted for more. Promised a reward of this nature, they were sometimes persuaded to engage in cooperative activities with Europeans or in hostile actions against mutual enemies. The Indians developed their firmest ties in the 18th century with the French, but these relationships were not always dependable, a fact illustrated by the murder of four Frenchmen in 1752 by Arkansas River Wichita (M. Wedel, 1981:47).

Although these Wichita had been affected in numerous ways between 1541 and 1750 by the European presence in North America, they continued to maintain a remarkably high degree of independence because of the distance of their homeland from the main areas of contention between France, England, and Spain. Their role at this time in the political maneuverings of the Europeans was not merely as political pawns.

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Shelling Corn in the Prairie-Plains: Archeological Evidence and Ethnographic Parallels beyond the Pun

David Mayer Gradwohl

ABSTRACT

This paper explores the contemporary, ethnographic, historic, and archeological evidence for the use of freshwater mussel shells as implements in shelling green corn. Today the Mesquakie Indians of central Iowa harvest green corn in the late summer. The green corn is parboiled and then shelled off the cob by using clam shells collected from the Iowa River. At present this practice is documented for eleven Native American groups in the Prairies and Plains extending back to the period of first observations by the French. Similar freshwater mussel shell artifacts are found in Oneota archeological sites along the Des Moines River along with evidence for the growing, harvesting, storing, and processing of corn. Comparable objects are noted in other Iowa sites, as well as some in Missouri, Kansas, Nebraska, South Dakota, and North Dakota. The documentation of this practice for nearly 1000 years into the present is symbolic of the many continuities of Native American traditions in the face of so-called assimilation by Euro-Americans.

ACKNOWLEDGMENTS.—Juanita Pudwill is presently a teacher in the North Wind Warriors Program, an innovative Title IV funded Native American educational project in Minneapolis, Minnesota. I am indebted to her not only for first bringing to my attention the use of clam shells as corn shellers and thus providing the spark for this paper, but also for being my challenging student, patient teacher, and understanding friend.

I would like to thank Frank and Adeline Wanatee (Mesquakie Indian Settlement, Tama, Iowa) and Mary Goose (Des Moines, Iowa) for sharing information with me concerning contemporary methods of shelling green corn at the Mesquakie Settlement. My gratitude is also expressed to Martha Royce Blaine (Oklahoma Historical Society, Oklahoma City), Dolores Gunnerson (Lincoln, Nebraska), David M. Hovde (South Dakota Archaeological Research Center, Fort Meade South Dakota), Douglas R. Parks (Mary College, Bismarck, North Dakota), Mildred Mott Wedel and Waldo R. Wedel (Smithsonian Institution) for pointing out ethnographic references for the use of shell. R. Stanley Riggle (Iowa State Historical Department, Iowa City) deserves many thanks for somehow finding the time beyond his gargantuan work schedule to identify the species of mussel shells considered in this paper. Sandra Wright (formerly with Iowa State University) is thanked for typing the final manuscript. Finally, I extend my deepest appreciation to Nancy Osborn (Iowa State University, Ames), who has assisted in a myriad of tasks in the field and laboratory and has, on the basis of her extensive knowledge of Native American food resources and preparation, provided valuable suggestions and criticisms as this project progressed.

The investigation of the Oneota sites was part of a cooperative salvage archeological program

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undertaken in Red Rock Reservoir by the National Park Service and Iowa State University between 1964 and 1968. A contract completion report covering sites included in these agreements was submitted to the National Park Service in 1973. In 1976, Nancy Osborn wrote her Master's thesis on "The Clarkson Site (13WA2): An Oneota Manfestation in the Central Des Moines River Valley." The analysis of all of the Moingona Phase materials, however, has not yet been completed.

Introduction

Recently a friend of mine, Juanita Pudwill, then a student at Iowa State University, was engaged in a study of corn ceremonialism among American Indians. Her study was based, in part, on her own experiences and observations at the Mesquakie Settlement near Tama, Iowa, where she was formerly employed as a teacher of speech and drama at the local high school. As a portion of her project, she reported the following to me in 1979:

> During the fall of 1976, I was invited to a friend's home on the Mesquakie Indian Settlement near Tama, Iowa, to take part in a corn harvest ceremony. I entered the house and went into the kitchen. A young woman of the family, who was a friend and former student of mine, was standing at the kitchen table sharpening the edge of a clam shell with a whetstone. There was a small box of the shells on the kitchen table. I asked her what she was doing. What I really meant was, "Why are you sharpening a shell?" She gave an upward and back nod of the head . . . . Following her nod I went into the front room, where representatives of four generations of the family had gathered to perform an annual ceremony . . . . I saw the use of the shell with the corn and immediately sat down with the family and began shelling corn.

Other than surprise, I had two immediate reactions. The first was inappropriate but uncontrollable laughter at the thought of the delightful pun: *shelling* corn! The second was an archeological flashback to Oneota storage pits that I had excavated at sites in the central Des Moines River Valley (Figure 15). Among other things, the fill of the storage pits had contained scapula hoes, antler picks and rakes, corn kernels and cobs, and notable numbers of worked mussel shells (Figure 16).

As I excitedly thumbed into the *Oxford English Dictionary* and *Webster's New World Dictionary* in pursuit of the pun possibly perpetrated by Pilgrim perceptions of Indian ingenuity, I thought to myself, "It can't be true." I quickly found that, indeed, it was not true. Our present use of the English phrase "to shell"—as in corn, peas, or walnuts—comes from the Middle English *schelle* meaning "to peel"—as in "to remove [a seed] from its shell, husk, or pod." Worse than that, as far as the putatively post-Columbian pun was concerned, the Middle English *schelle* has a linguistic ancestry going all the way back to a reconstructed Indo-European base, **sqel-*.

The second and more serious question still remained. Could the worked mussel shell valves discovered in Oneota cache pits represent implements used in removing kernels from cobs as part of the green corn harvest?

The purpose of this paper is to discuss the contemporary ethnographic, historic, and archeological evidence for interpreting certain freshwater mussel valves as green corn shellers. This paper does not pretend to have captured all of the archeological examples or ethnographic analogs for clam shell corn shellers. My intent is rather to document the linkage of the archeological evidence with historic, as well as contemporary, behavior patterns and to focus attention on the social and ideological ramifications of these data.

The methodological perspective employed in this paper is essentially that which is called the controlled ethnographic parallel or analogy. Ethnologists and social anthropologists typically use the method of controlled comparison (Eggan, 1954) and have shown the utility of this approach in studying the archeology of the eastern United States (Eggan, 1952). Traditionally archeologists, spanning the gamut from the supposedly "old" to the presumably "new," have utilized this method in interpreting the function of artifacts, reconstructing culture history, and exploring theories of culture change (cf., Strong, 1936; Mott,

FIGURE 15.—Oneota storage pits being excavated at 13PK1, Howard Goodhue site, along the Des Moines River in central Iowa.

1938; W. Wedel, 1938; Ascher, 1961; Binford, 1962; Anderson, 1969). This study examines a specific shell artifact form with its broader socio-economic and perhaps also magico-religious contexts. The spatial domain consists of eastern North America and more specifically the Prairies and Plains. The temporal control is approximately one millennium, from circa A.D. 900 or 1000 to the present.

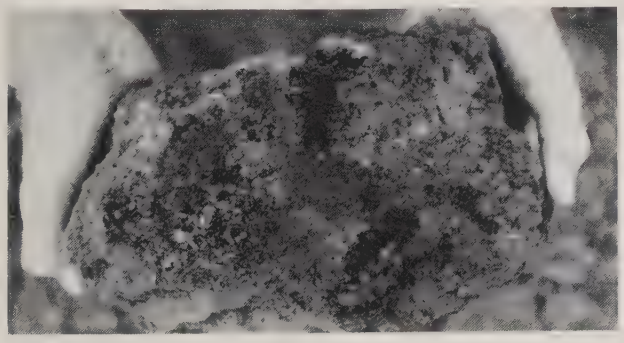

FIGURE 16.—Soil matrix lifted from storage pit at 13WA105, Cribbs' Crib site. Within matrix are cobs and kernels of 8- and 10-row corn.

The following discussion is presented in six parts. First there is a brief review of the literature pertaining to the use of mollusk shells by American Indians. The second section brings together the published historic and ethnographic references for the use of mussel valves as corn shellers. That part is followed by a short summary of alternate methods of shelling corn. The fourth portion of this paper presents information on the contemporary Mesquakie use of clam shells in processing green corn. These data supplement the

much larger body of literature available on the Mesquakie, or as they have been labelled by Euro-Americans, the Fox (cf., Ward, 1909; Michelson, 1919; Jones, 1939; Tax, 1955; Gearing, Netting and Peattie, 1960; Gearing, 1970; McTaggart, 1976; A. Wanatee, 1978; D. Wanatee, 1978; Waseskuk, 1978). The archeological evidence for artifacts fashioned from the valves of freshwater mussels is presented next. Specimens illustrated here are from the collections of the Iowa State University Archaeological Laboratory (ISU). Finally the discussion ends with some reflections on the necessity for working out well-documented ethnographic parallels in archeology and, more importantly, the significance of archeological and historical data in helping to understand living people (cf., Gradwohl, 1978). In these ways the study of the past can be relevant not only to the present but to the future as well.

Use of Mollusk Shells by Native Americans

In perusing the historic and ethnographic literature pertaining to the Indians first encountered by the Europeans in what is now the northeastern and middle Atlantic regions of the United States, I am aware of only one reference to the use of mussel shells as implements for removing corn kernels from the cob. In the early eighteenth century John Gyles was taken captive by Native Americans in northern New England. There he (Gyles, 1736:11) observed and later recorded the following procedure among his captors:

> When the Corn is in the Milk they gather a large kettle and boil it on the Ears till its pretty hard, and then they take it up and shell it from the Cobb with Clam Shells . . . .

Further research may well reveal additional specific references, but most sources are vexingly vague as to the techniques of detaching kernels from the cob.

Admittedly, some observers report that corn was "shelled," "removed," "shaved," "stripped off," "scraped," or "sliced" from the cob without bothering to indicate what tool was used to detach the kernels. The lack of references to implements could be taken as an indication that the corn was merely shelled by hand. There are, however, some specific references to shell implements in the early historic journals. The nature of these sources suggests that the use of mussel valves as corn shellers would have been reported more extensively if, indeed, shells were employed generally for that purpose. In 1612, for example, Captain John Smith noted that Native Americans in Virginia employed shell scrapers along with charring to fashion wooden platters for corn meal (Rasmussen, 1975:68), while in 1634 William Wood observed Indians in New England using "clamme shell-hooes" in tending their gardens of corn (Rasmussen, 1975:71). In his treatise of 1705, Robert Beverley illustrated a cockle shell spoon along with other dining accouterments being used by Indians in Virginia and commented that "the spoons which they eat with, do generally hold half a pint; and they laugh at the *English* for using small ones, which they must be forc'd to carry so often to their Mouths, that their Arms are in danger of being tir'd, before their Belly" (Beverley, 1968:182–184). In 1749 while traveling through New Jersey, Peter Kalm (1972:220–221) recorded his observation of sharp shells being used as knives in various cutting functions and as scrapers in the manufacture of canoes.

The kinds of observations made by Smith (1977), Wood (1967), Beverely, and Kalm are reflected in the general but more extensive studies pertaining to the use of shells by Native Americans. The utilization of mussel valves in shelling corn is not mentioned by William H. Holmes (1883), W.J. Wintemberg (1908), Herbert W. Kuhm (1937), or M.R. Harrington (1938) in their comprehensive reviews and case studies. Those sources, however, document an impressive array of uses for shells as cups, dishes, spoons, knives, celts, scrapers, rasps, hoes, digging tools, fishhooks, fish lures, fish scalers, arrowheads, razors, tweezers, awls, punches, gaming pieces, musical instruments, and various ornaments including beads, pendants, pins, and gorgets. In certain areas of North America shells were used as currency or as symbols in dry paintings; in other areas, crushed shells served as tempering for pottery.

It is possible that still other uses, perhaps even including corn shellers, were cataloged by H.J. Boekelman who wrote an article in 1937 with the tantalizing title "Archeo- and Ethno-conchology: The Study of Man's Use of Shells" (Boekelman, 1937). Unfortunately Boekelman's article is only a brief summary of his world-wide research and as such does not add much to the information contained in the previously mentioned papers. Boekelman reported that he had assembled 6000 typewritten pages of literature, bibliography, abstracts, and translations from French, German, Spanish, Portuguese, and Japanese. Furthermore, he stated that he had deposited his collection of specimens at Tulane University for further study. Apparently Boekelman did not publish any further on this subject. At the present time my inquiries have not verified that Boekelman's archival materials and shell collections are still housed at Tulane University.

Historic and Ethnographic References to the Use of Mussel Shells as Corn Shellers

Among the tribes of the northeastern United States and the Atlantic seaboard there is an apparent, and I think real, paucity of data for the use of mussel valve corn shellers. However, one finds a definite pattern for this usage in searching through the historic and ethnographic literature on American Indian tribes of the Prairies and Plains. The available references which span nearly 300 years identify this practice among eleven groups, but further search will undoubtedly reveal more. The tribes now documented stretch west from the Great Lakes to central Nebraska and from Kansas into North Dakota, and represent three separate and distinct linguistic groups: Algonkian (Illinois, Prairie Potawatomi, Sauk, historic Fox, and contemporary Mesquakie), Siouan (Winnebago, Ioway, Oto, and Hidatsa), and Caddoan (Pawnee and Wichita).

The earliest archival reference for the use of clam shells in processing green corn in the Prairies and Plains appears to be a late seventeenth-century document pertaining to the French occupation of the region around Fort St. Louis and Chicago. This document, often incorrectly referred to as the "De Gannes Memoir," is attributed to Pierre-Charles DeLiette, a cousin of and assistant to Henri Tonty (Hayne, 1969:435–436; Quaife, 1947:110–111). An observation among the Illinois, apparently in July of 1687 (in Pease and Werner, 1934:343–344), reads as follows:

> To return to the occupations of the women, at the end of July they begin to mix or dry the corn. They make two kinds. That which they roast gives them more trouble than that which they boil, for they have to make large griddles and exercise particular care to turn the ears from time to time to prevent their burning too much on one side, and afterwards they have to shell off the kernels. They therefore make very little of this kind. The kind which they boil they gather just as tender as the corn for roasting, and with shells, which they find more convenient than knives, they cut all the kernels, throwing away the cobs, until they have about the quantity they wish to cook for that day. They never keep any for the next day because of the excessive care needed to prevent it from turning sour. After this, as soon as it has boiled for a few minutes, they spread it on reed mats .... The drying process usually takes two days. They make a great store of this kind.

According to this document, the Illinois processed the early green corn in at least two ways—one of which involved the use of shells to remove the kernels from the cobs. The DeLiette Memoir also notes a still different manner of preparing the corn which ripened later in the summer (Pease and Werner, 1934:344).

> As regards the large ears which are ripe at the end of August, after they have gathered it they husk the ears and spread them on mats. In the evening they gather them into a heap and cover them well; when the sun has risen they spread them again, and they keep this up for a week; then they thresh it with big sticks six or seven feet long, in a place which they surround with matting to prevent the flying kernels from getting lost.

The Illinois, as most Prairie and Plains horticultural groups, raised distinct varieties of corn, which ripened at separate times and were processed differently for various purposes.

Among the Sauk, Alanson Skinner (1925:137–138) reported that maize was eaten in the form of boiled corn, parched corn, pop corn, hominy, bread, cake, soup, dumplings, and ground meal. More specifically he (1925:137) reported that

> sweet corn, *wisko'pimînûk*, is eaten green after boiling or roasting in the embers. It is also prepared by parboiling,

drying over night and scraping from the cob with a mussel shell, the left valve of the animal being most convenient for the use of the ordinary right-handed person. It is then dried on mats spread in the hot sun on the ground. Two days exposure are enough to cure it for winter use. In this condition it is called *pagaswahuk* and is ready to grind with mortar and pestle (*pota'hagûn* and *pota'hagûn hûskwan*) to make corn meal.

Skinner further noted that among the Sauk "green corn, while still somewhat milky, is scraped free from the cob with a deer's jaw." As noted below (p. 144), deer-jaw corn shellers are recorded ethnographically for other groups in the Prairies and Plains, as well as in the northeastern United States and Canada.

The historic Fox also used clam shells in removing green corn from the cob. In his ethnographic treatise, the anthropologist, Dr. William Jones (1939:17), himself of Fox descent and upbringing, elucidates the spiritual as well as dietary aspects of maize consumption:

Tamina (corn) is a manitou, and every little grain is a mortal. The name of each grain is *wipita*. All of these grains of corn have feelings like you and me, and when they are taken from the cob and wasted they feel sad and begin to weep. When Wīsa'kä created *tamina*, he made it a food for the people (Foxes). When they eat *tamina*, the manitou goes into every part of the body, and that makes the people strong. The people need not have anything else before them to eat but *tamina*, because it has everything in itself to make them do what they wish. When they travel, they go much farther after eating *tamina* than after eating any other food. *Tamina* is a manitou, and that is why it has so much strength.

In editing the above passage for the posthumous publication of Jones' monograph, Margaret Welpley Fisher added the following footnote (Jones, 1939, n. 21): "Corn should be shelled from the cob with a clam shell, or if one has no shell, with a spoon. A knife should never be used." Fisher's citation documenting this practice was in reference to the contemporary Mesquakies in Iowa. The recording of this procedure was accomplished by Edgar R. Harlan, curator of Iowa's State Historical Museum in Des Moines, who had arranged a number of cross-cultural workshops in which Mesquakies discussed aspects of their lifeways with local school teachers. Harlan (1933:117) reported:

The Indians explained to the teachers how the foods were prepared. In preparing corn the kernels were taken whole from the cob. Anciently they used, and now perfer to use, a fresh water clam-shell—a muscle [sic] shell. When they have no shell they use a spoon, never a knife as white people do. By running the edge of the shell between the rows, the green kernels are "shelled" from the cob. Then it had been dried.

As will be discussed (p.145), the techniques of shelling corn as described by Mesquakies in the 1930s are still in practice today.

The Potawatomi, originally neighbors of the Illinois, Sauk, and Mesquakies in the Western Great Lakes area, may also have used freshwater mussel valves as green corn shellers in the early historic period. During the 1930s Floyd Schultz took moving picture films recording this practice among the Prairie Band Potawatomi of Kansas. These scenes can be viewed in the film, *Neshnabek*, recently produced by the University of Kansas (Stull and Hirsch, 1980).

Another group residing in the western Great Lakes area at the time of Euro-American contact was the Winnebago tribe. In her autobiography, Mountain Wolf Woman vividly recalled her experiences in harvesting and preparing corn during the late nineteenth century (Lurie, 1966:11–12):

When various foods were ripe the people dried them. They also steamed things underground. They harvested a lot of corn and carried it home on their backs. When I was a little girl our family was large. I was the youngest and I had three older brothers and two older sisters. Another older sister and I were the younger ones. When they harvested the gardens, they harvested a great amount. They steamed the corn. In the evening they dug a pit and heated stones there in a big fire. They put the stones in the pit and when the stones became red hot they took out all the wood and embers and put in the corn husks. Then they put in the fully ripe corn and covered it with more husks. Finally they covered it with the earth that had been dug out. They covered the pit but they left four holes in which they poured the water. We used to hear the red hot stones make a rumbling sound.

Then, very early in the morning they opened the pit with great care. They removed the earth very carefully and finally when they reached the husks they took them out. Eventually they reached the corn and it was thoroughly cooked. It was really hot! They took the corn out and put it on the husks. Sometimes other people heard about it and worked with my family. The helpers came and spread out a big piece of

canvas on which they put the corn. Then they used metal teaspoons or clam shells to scrape the corn off the cobs. They used to dry it and after it was dried you could see sackfuls of corn standing here and there.

Paul Radin (1973:69) recorded essentially the same scene among the Winnebago, although he stated that "the outer part of an oyster shell" was employed in shelling the corn.

The Ioway, according to Skinner (1926:288) had five varieties of corn and several different ways of preparing this food (Skinner, 1926a:289):

> [Among the Ioway] milk ears were taken and boiled until cooked through, then spread out on layers of their own husks. After an hour or two, when the corn had dried out a little, the kernels were scraped off with the edges of mussel shells. The corn was then spread out on a buffalo hide and dried, and could be kept in this condition all the year. When desired for the meal, it was boiled and eaten, generally with meat.

The Ioway also prepared green corn by roasting the ears in "little ovens dug out in the ground" or by partially husking the corn and braiding the husks together in long strings. The dried corn could then be pulverized in a log mortar or else ground "on a flat stone by means of a small discoidal stone corn crusher which was often pitted."

William Whitman's Oto informant, referred to as B.D., was born in Gage County, Nebraska, in 1863, lived as a child in a "mud lodge," and accompanied his tribesmen on buffalo hunts. B.D. described the harvesting activities that occurred after the people returned from the spring buffalo hunt and participated in a feast held by the Red Bean Medicine Lodge (Whitman, 1937:5):

> Everybody went to the patch, harvested the green corn, and dug it up. They shucked the corn and put it in boiling water. When it was soft, they poured it out. They used shells to scrape the corn off the cobs. One acre or two in the creek bottoms made a lot of corn. It seemed to run to about fifty or sixty bushels to the acre. They saved some for next year's seed. Each family saved its own seed for replanting. If any one broke the rules (ate the corn before the harvest feast) something bad would happen to him. We could eat pumpkin, but we could not eat as much as we wanted till that ceremony was over.

The feast referred to by B.D. is one of a category variously labelled in the ethnographic literature as the green corn dance, first fruits ceremony, summer food feast, or feast of thanksgiving for the crops. Green corn ceremonialism among the tribes of the northeastern and southeastern woodlands has been summarized by John Witthoft (1949). Extensions of this complex can be seen farther to the west, for example, among the Oto as mentioned above in addition to the Fox (Jones, 1939:91–95), Sauk (Skinner, 1923:52–53), Winnebago (Radin, 1973:336), and Pawnee (Weltfish, 1965:254–256). According to Will and Hyde (1964:116), green corn ceremonies were virtually absent among the tribes along the upper Missouri River.

On the other hand, perhaps the most detailed information concerning agriculture and food processing among Indians of the Prairies and Plains pertains to the Hidatsa in the account of Buffalobird-woman or *Maxi'diwiac* as presented by Gilbert L. Wilson (1917). Buffalobird-woman commented that women worked together in shelling corn and that it was rather tedious work. Fresh ears of green corn could be shelled off with the thumbnail. Boiled green corn, however, was removed with a mussel shell. The precise and systematic procedures that the Hidatsa employed in the harvesting and processing of green corn can be followed step-by-step in an excerpt from Buffalobird-woman's narrative (Wilson, 1917:39–41). The statement, admittedly lengthy, is especially fascinating in showing: (1) the spatial domains which Buffalobird-woman moves through from garden to village, and from earth lodge to external drying rack; (2) the temporal span of the process; (3) the secondary use of skin tent-covers for activities within the earth lodge village; (4) alternate methods of removing the kernels from the cobs; and (5) the esthetic as well as arduous aspects of the operation. In Buffalobird-woman's translated words (Wilson, 1917:39–41):

> Every Hidatsa family put up a store of dried green corn for winter. This is the way in which I prepared my family's store.
>
> In the proper season I went out into our garden and broke

off the ears that I found, that were of a dark green outside. Sometimes I even broke open the husks to see if the ear was just right, but this was seldom, as I could tell very well by the color and other signs I have described. I went all over the garden, plucking the dark green ears, and putting them in a pile in some convenient spot on the cultivated ground. If I was close enough I tossed each ear upon the pile as I plucked it; but as I drew further away, I gathered the ears into my basket and bore them to the pile.

I left off plucking when the pile contained five basketfuls if I was working alone. If two of us were working we plucked about ten basketfuls.

Green corn for drying was always plucked in the evening, just before sunset; and the newly plucked ears were let lie in the pile all night, in the open air. The corn was not brought home on the evening of the plucking, because if kept in the earth lodge overnight it would not taste so fresh and sweet, we thought.

The next morning before breakfast, I went out to the field and fetched the corn to our lodge in the village. As I brought the baskets into the lodge, I emptied them in a pile. . .near the fire.

Sitting. . ., I now began husking, breaking off the husks from each ear in three strokes, thus: with my hand I drew back half the husk; second, I drew back the other half, third, I broke the husk from the cob. The husks I put in a pile. . .to one side. No husking pegs were used, such as you describe to me; I could husk quite rapidly with my bare hands.

As the ears were stripped, they were laid in a pile upon some of the discarded husks, spread for that purpose. The freshly husked ears made a pretty sight; some of them were big, fine ones, and all had plump, shiny kernels. A twelve-row ear we thought a big one; a few very big ears had fourteen rows of kernels; smaller ears had not more than eight rows.

Two kettles, meanwhile, had been prepared. One. . .was set upon coals in the fireplace; the other. . .was suspended over the fire by a chain attached to the drying pole. The kettles held water, which was now brought to a boil.

When enough corn was husked to fill one of these kettles, I gathered up the ears and dropped them in the boiling water. I watched the corn carefully, and when it was about half cooked, I lifted the ears out with a mountain sheep horn spoon and laid them on a pile of husks.

When all the corn was cooked, I loaded the ears in my basket and bore them out upon the drying stage, where I laid them in rows, side by side, upon the stage floor. There I left them to dry overnight.

The work of bringing in the five basketfuls of corn from the field and boiling the ears took all day, until evening.

In the morning the corn was brought into the lodge again. A skin tent cover had been spread on the floor and the half boiled ears were laid on it, in a pile. I now sat on the floor, as an Indian woman sits, with ankles to the right, and with the edge of the tent cover drawn over my knees, I took an ear of the half boiled corn in my left hand, holding it with the greater end toward me. I had a small, pointed stick; and this I ran, point forward, down between two rows of kernels, thus loosening the grains. The right hand row of the two rows of loosened kernels I now shelled off with my right thumb. I then shelled off all the other rows of kernels, one row at a time, working toward the left, and rolling the cob over toward the right as I did so.

There was another way of shelling half boiled corn. As before, I would run a sharpened stick down two rows of kernels, loosening the grains; and I would then shell them off with smart, quick strokes of a mussel shell held in my right hand. We still shell half boiled corn in this way, using large spoons instead of shells. There were very few metal spoons in use in my tribe when I was a girl; mussel shells were used instead for most purposes.

If while I was shelling the corn, a girl or woman came into the lodge to visit, she would sit down and lend a hand while we chatted; thus the shelling was soon done.

The shelling finished, I took an old tent cover and spread it on the floor of the drying stage outside. On this cover I spread the shelled corn to dry, carrying it up on the stage in my basket.

At night I covered the drying corn with old tent skins to protect it from dampness.

The corn dried in about four days.

When the corn was well dried, I winnowed it. This I sometimes did on the floor of the drying stage, sometimes on the ground.

Having chosen a day when a slight wind was blowing, I filled a wooden bowl from the dried corn that lay heaped on the tent cover; and holding the bowl aloft I let the grain pour slowly from it, that any chaff might be winnowed out.

The corn was now ready to be put in sacks for winter.

Buffalobird-woman also commented that all varieties of corn could be processed in this manner, although other methods were known. She observed that the Arikara prepared green corn by roasting the ears in a subterranean pit. Although, increasingly, some Mandan and Hidatsa were imitating the Arikara in this respect, Buffalobird-woman did not. As she put it, "I do not like to eat food made of this dried, roasted corn; it is dirty!" (Wilson, 1917:41).

Available sources do not indicate whether or not the Arikara used freshwater mussel valves in shelling corn. Their Pawnee relatives, however, did follow this practice, as well as that of roasting the ears of corn in excavated pits. John Dunbar (1880:276–277) reported that the Pawnee remained on the summer hunt until about the first

of September when they returned to harvest their corn:

> This (roasting-ear time) was a specially busy season. After providing a good supply of fuel, fires were built about the patches, and the squaws and children were occupied from early morning till nightfall in gathering, roasting, shelling, and drying corn. The corn after picking was thrown in armfuls into the fire and roasted, still in the husks. The husks were then removed, the kernels cut from the cob with the sharpened edge of a clam shell and spread upon outstretched blankets or skins till dried by the rays of the sun. It was then stored away in skin bags for future use. The work of drying usually continued as long as any corn was to be found in fit condition. Whatever corn was not dried was allowed to ripen till October, when it was gathered and cached.

Gene Weltfish (1937:35, 40; 1965:240–245) corroborated Dunbar's observations on the Pawnee. She described further the method of drying the shelled corn after it had been removed from the cob (Weltfish, 1965:245):

> The kernels were cut off the cob row by row with a freshwater clam shell and spread on a tanned hide to dry. At night the kernels were first winnowed to remove any chaff, gathered up and put in a flour sack, and then taken into the tent. They were put in a wooden bowl and spilled out from a height so that the wind would blow the chaff away. Next morning they were again spread out on the tanned hide. After several days, as they were being spilled for winnowing in the evening, they would make a tapping noise when they hit the hide, showing that the kernels were completely dry.

Weltfish also stated that most of the ears of sweet corn, as well as selected ears of green corn, were braided together by their husks and hung up in the earth lodges for the purposes of storage.

The tradition of shelling corn with mussel valves apparently continued among the Pawnee after they were removed to Oklahoma. When Effie Blaine, a Pawnee woman, moved to Oklahoma, she is reported to have brought some clam shells with her from Nebraska (Martha Royce Blaine, pers. comm., 1980). Viola Blaine McIntosh, Effie Blaine's daughter, remembers watching her mother shell corn with clam shells, and she recently described the procedure to Martha Royce Blaine (pers. comm., 1981). The process was essentially that recorded earlier among the Pawnee in their Nebraska homeland.

The shelling of green corn with clam shells appears to have been practiced also by the Wichita within the twentieth century. When Clara Moonlight, a Wichita, was a child, she observed her mother preparing green corn. Her observations were recalled recently to Waldo R. Wedel who subsequently shared the information with me (Waldo R. Wedel, pers. comm., 1980). According to Clara Moonlight, her mother selected cobs of corn with their husks still attached. The corn was cooked on an iron sheet placed over a trench in which a fire had been built. Sharpened freshwater clam shells were then used to detach the kernels from the partially roasted cobs.

Alternate Methods of Shelling Corn

Corn kernels can be detached from the cob in several different ways other than with mussel shells or with metal spoons, the Euro-American trade counterparts of shells. Corn was probably shelled by hand by many groups. This was the procedure among the Iroquois (Morgan, 1962: 370) and Hidatsa (Wilson, 1917:38, 40, 48). Buffalobird-woman, for example, described holding ears of parboiled green corn in her left hand while detaching kernels with her right thumb tip or thumbnail. She also shelled seed corn from ears dried on the drying stage in this manner. In addition Buffalobird-woman commented that "sometimes we shelled an ear by rubbing it against another ear" (Wilson, 1917:48).

Threshing corn kernels off dried ears is another method noted in the literature. The Illinois, observed in 1687, dried their husked corn on reed mats for about a week, and then threshed it "with big sticks six or seven feet long, in a place which they surround with matting to prevent the flying kernels from getting lost" (Pease and Werner, 1934:344). The Hidatsa also threshed corn that had been dried on the drying stage (Wilson, 1917:49–53). The threshing was carried out in rectangular skin-covered booths constructed beneath the drying stages. These structures were described in detail by Buffalobird-woman and were illustrated by her son, Edward Goodbird.

Three or four women would normally work in the booth at one time, threshing the corn with flails of ash or cottonwood.

In some sources, cited previously, the use of a knife in shelling corn appears to be almost a taboo. On the other hand this procedure is reported for the Iroquois (Harrington, 1908:589) and for the Prairie Potawatomi or Mascouten (Skinner, 1926b:284).

Some American Indian groups employed pointed sticks in shelling corn. The Pawnee used such tools to pry off kernels from ears of mature corn (Weltfish, 1965:244, 246, 252). This practice is also indicated for the Hidatsa in Buffalobird-woman's statement that pointed sticks were sometimes used in conjunction with the thumb or a mussel shell in shelling corn (Wilson, 1917:40–41). This method is also reflected in the 26th stanza of an Omaha maize ritual song which, freely translated, reads: "O hasten!/Rip from its cob/My fruit as I stand/And eat me!" (Fletcher and LaFlesche, 1911:262–268). The second line of this stanza is literally translated as "to push off with a stick, to shell." Peter LeClaire, generally recognized as the leading Ponca historian, reported the former use of wooden stick corn shellers among his tribe, and he carved such an implement for James Howard (1965:45, pl. 22e).

Another technique employed by some Native Americans apparently involved pounding the kernels off the cob with a pestle or grinding stone. Among the Pawnee, for example, Weltfish (1965:240), describing a harvest scene in which Grandma went to stay in a temporary willow sapling shelter in her cornfield, narrated as follows:

> She had a kettle along and a small mortar and pestle for preparing her meals. She would pound some of the fresh corn kernels from the roasted cobs and wrap them in corn husks, putting them in the boiling water to make dumplings.

Arthur C. Parker (1910:54), an anthropologist of Seneca background, discussed a similar method in his extensive tome on Iroquois maize preparation techniques:

> Another method of bruising green corn on the cob was to place a flat grinding stone in a large wooden or bark bowl, hold the ear on the stone with one hand and mash the unripe kernels with a milling stone held in the other hand. The bruised corn was then brushed from the mortar stone and the kernels that yet adhered to the cob, scraped off. When enough material had been thus prepared the lower stone was removed from the bowl and the mashed corn removed for cooking.

Beyond these cases, of course, American Indians almost everywhere used grinding stones, mullers, mortars, and pestles in pulverizing corn kernels once they were detached—by whatever method—from the cob.

The use of deer jaws for shelling corn is exemplified in tribes ranging from the northeastern United States to the Plains. These artifacts were first documented among the Iroquois by Parker in 1903 and subsequently reported by him in bulletins of the New York State Museum (Parker, 1907:544; 1910:53). Deer jaw corn scrapers were also documented among the Iroquois by Harrington (1908:580) and Waugh (1916:96, pl. 6c). Parker (1910:53) described the type specimen, which he collected among the Seneca, as follows:

> It is simply one of the rami of a deer's lower jaw and is complete without trimming or finishing in any way. The jaw was held by the anterior toothless portion and with the sharp back teeth the green corn was scraped from the cob. The name of the implement, Yiğassho$^{n\prime}$gäya$''$to', is derived from ogo$^{n\prime}$sä, *green corn*, and yigowe$^{n\prime}$to', *it scrapes*.
>
> The Seneca housewife when she uses the jaw scraper, with characteristic humor, says, "I am letting the deer chew the corn first for me."

Contrary to the above statement that the deer jaws were not finished in any way prior to being used as corn shellers, one should note that Parker's original specimen and also those illustrated by Waugh and Harrington all have had their ascending rami removed. This trimming does indeed, as pointed out by Harrington (1908:580), appear to be a systematic preparation of the jaws for use as corn shellers. Farther west, the use of deer rami as corn shellers is documented for the Sauk (Skinner, 1925:137) and the Prairie Potawatomi or Mascouten (Skinner, 1926a:284). On the basis of worked and utilized deer rami found at protohistoric and historic archeological sites in Nebraska and Kansas, Wedel (1936:86) has sug-

gested the use of these implements as corn shellers among the Pawnee.

Among the Seneca the corn prepared by removing the kernels from the cob with a deer jaw sheller is called by a name meaning "already chewed" (Parker, 1907:544). An even more literal method of shelling corn was reported by Father Gabriel Sagard (1939:105) who lived with the Hurons in 1623 and 1624:

> They make another kind of bread: they gather a number of ears of corn before it is thoroughly dry and ripe, and then the women, girls, and children bite off the grains, spitting them out of their mouths afterwards into large pots which they keep beside them, and then they finish by pounding it in a large mortar; and since this paste is very soft they must necessarily wrap it in leaves in order to bake it under the ashes in the usual way. This chewed bread is the kind they themselves prize most, but for my part I only ate it of necessity and reluctantly. . . .

Sagard's humor on this general subject was obviously less than that of Parker's Seneca housewife informant!

Contemporary Use of Clam Shell Corn Shellers by the Mesquakie

In late August of 1979, Nancy Osborn and I visited Frank and Adeline Wanatee at their home on the Mesquakie Settlement. They shared with us information pertaining to the harvesting and preparation of green corn. That season the corn was a little late in maturing and was a week or two away from being harvested. Frank showed me his garden located in the corner of his yard to the southeast of his house. The corn was planted in rows and to either side were growing squash and other vegetables. Frank peeled back a portion of the husk from an ear of large-kerneled white corn, one of five varieties (red, blue, two kinds of white, and a mixed blue and white), which he said are grown by the Mesquakies. He pinched a kernel and observed that, since milk was showing, the corn was nearly ready to be harvested.

Frank also showed me the open-air arbor, a ramada-type structure, located north and east of his house. Here the harvested green corn would be parboiled. After the corn is picked, the husks are removed from the ears. Then the husks are spread out on the ground while the ears of corn are placed in a large kettle to boil. Within the kettle the ears are kept turning with a large "mesh spoon." After the corn is parboiled, the ears are removed from the kettle and laid out on the bed of husks. When all the picked corn is parboiled and set out in this fashion, the entire mass is covered with husks and allowed to drain and partially dry out over night.

The next morning the shelling process begins. Adeline commented that they try to get going as early as possible in the morning to take advantage of a nice sunny day for drying the corn. Shelling corn is an extended family affair with women and men, boys and girls, participating. In former times, Frank thought that shelling corn was more of a community project and was the task of women.

The parboiled corn is shelled by using the valves of freshwater mussels collected along the banks of the Iowa River, which flows through the Mesquakie Settlement. The Wanatees, on occasion, pick up shells that feel comfortable in the hand and save them for future use as corn shellers. They each have favorite clam shells that they prefer to use. Sometimes, as Adeline observed, shells are brought to her by children who find them while playing along the river. The Wanatees said they had heard that the clam shells along the Mississippi River are thicker and that they might try to pick up some there on one of their trips to Rock Island. The six clam shells they showed us, however, had been collected along the Iowa River and had been used as corn shellers without any special prepration (Figure 17). Depending on its thickness and brittleness, an individual shell could last several years as a corn sheller, since it would not be used for other functions.

The identification and characteristics of the Wanatees' clam shell corn shellers are summarized in Table 1. Species identification of the shells was provided by R. Stanley Riggle, chief of the Iowa Archeological Survey, State Historic Preservation Program, Iowa City, Iowa. Of the six specimens, four different genera are repre-

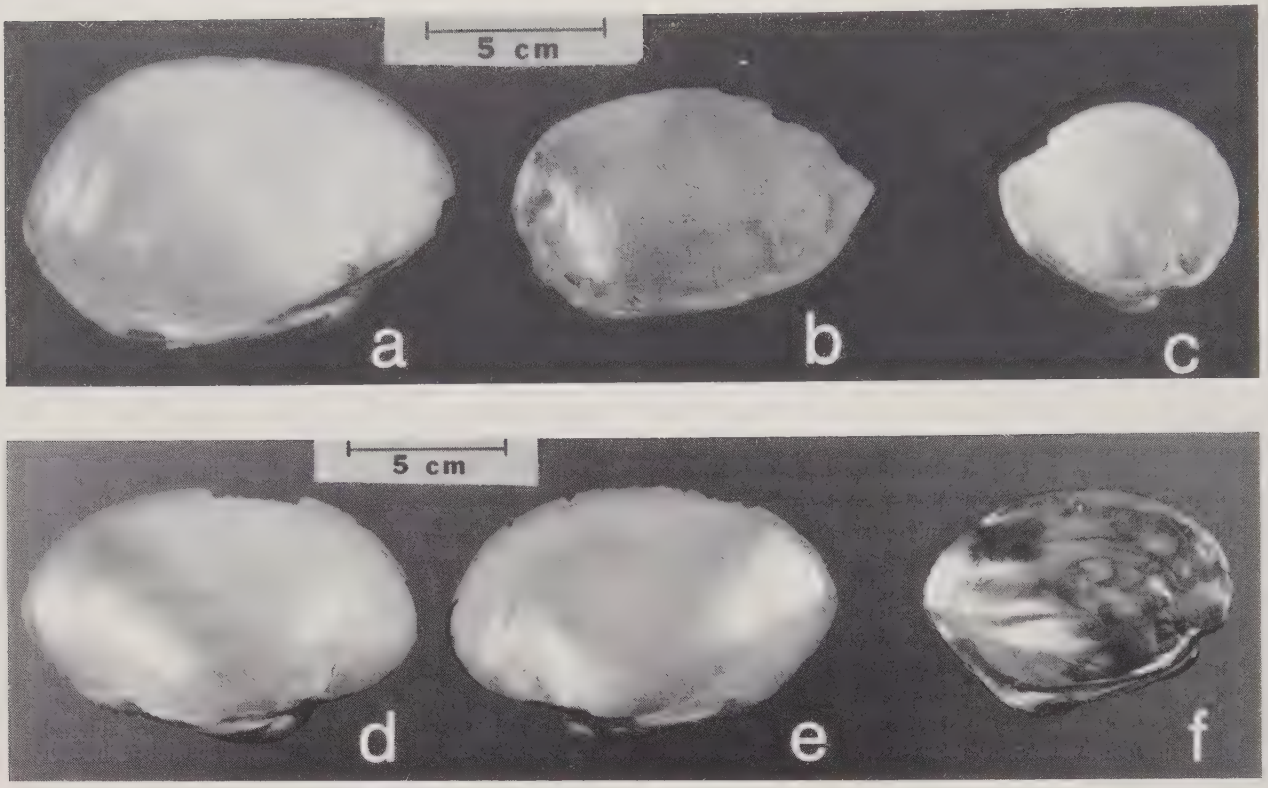

FIGURE 17.—Freshwater mussel shells used by Frank and Adeline Wanatee in shelling green corn at the Mesquakie Settlement (scales = 5 cm).

sented: *Fusconaia flava* (trans Rafinesque, 1820), *Actinonaias carinata* (Barnes, 1823), *Lampsilis ventricosa* (Barnes, 1823), and *Amblema plicata* (Say, 1817). Two specimens represent valves from the same individual *L. ventricosa.* Four of the specimens are right valves; two are left. Modification of the ventral margins of the shells by use is observed on all specimens, but the characteristics vary. Chipping and grinding along the margins are the most noticeable characteristics. At this point I cannot satisfactorily document the reasons for the differences in edge wear. It is interesting to note, however, that the two valves from the same *L. ventricosa*, specimens "E" and "F", exhibit the same apparent characteristics which are different than those observed on specimen "C," which is of the same species. On this basis I suspect some of the differences might be explained by (1) the size and age of the mussel prior to its death; (2) the duration of exposure to weathering and acid soil conditions prior to being collected for potential use as a tool; and (3) the length of time the particular valve had been used in shelling corn.

In shelling the parboiled green corn, the Wanatees said that the clam shell is held in the right hand and the ear of corn in the left hand. The shell is grasped so that all four fingers are inside the shell and are curled up under its hinge. The palm and thumb are pressed against the outside surface of the shell along its upper border (dorsal margin or umbo). Thus the shell is held with its interior surface away from the person shelling corn. To detach kernels from the cob, the lower edge (ventral margin) of the shell is pressed down in between the rows of kernels. Individual rows are removed, one at a time, by a series of short twisting motions with the clam shell. Frank observed that "the back edge of the shell does most of the work."

TABLE 1.—Identification and characteristics of freshwater mussel-valve corn shellers used by Frank and Adeline Wanatee

Shell and side	*Species*	*Length* (mm)	*Height* (mm)	*Thickness* (mm)	*Observed use modification*
A, right	*Fusconaia flava* (trans Rafinesque, 1820)	66	58	20	Anterior ventral margin ground; posterior ventral margin irregularly but noticeably chipped and smoothed
B, left	*Actinonaias carinata* (Barnes, 1823)	100	62	22	Anterior ventral margin ground, but rougher and not as rounded as specimen "A"; posterior end developing a pointed appearance
C, right	*Lampsilis ventricosa* (Barnes, 1823)	117	82	27	Valve thicker and more massive; anterior ventral margin very noticeably ground and rounded; posterior ventral margin slightly chipped and less noticeably ground
D, right	*Amblema plicata* (Say, 1817)	97	70	21	Anterior ventral margin noticeably ground and rounded; grinding continues along edge to point past midline; hinge and teeth slightly blunted and rounded as if by use
E, left	*Lampsilis ventricosa* (Barnes, 1823)	122	79	26	Ventral margin irregularly chipped and broken; very little grinding observed; margin has a crenulated or saw-tooth appearance
F, right	*Lampsilis ventricosa* (Barnes, 1823)	121	78	26	Same individual as specimen "E"; virtually the same characteristics observed as for specimen "E"

After all the corn is shelled, the kernels are spread out on muslin sheets to dry in the sun. Several times during the day the kernels are turned and rolled over with the hand so that they dry evenly. At night the edges of the sheets are gathered up, and the corn is brought into the house. The next day this process is repeated. If it happens to be raining outside during the day, the sheets are spread out inside the house and the corn continues drying there. Under normal conditions it takes four days for the corn to dry. If the corn is not sufficiently dried at the end of four days, the process is continued until no more moisture remains in the kernels.

After the Wanatees' corn dries, they place the kernels in paper bags and then put the bags into fifty-pound lard cans, which are stored in a sleeping room that is consistently cool. Frank periodically opens up the lard cans to make sure that no moisture has collected within the tins. In particular he checks the dried corn when weather conditions change suddenly. In these situations condensation might occur within the cans and the moisture could ruin the corn. Early and late ripening batches of corn are stored in separate containers because the time required to cook them varies. We were shown a five gallon white plastic pail that contained shelled white corn. In this instance, Adeline said the corn had been allowed to dry on the cob and then the kernels had been pushed off with her thumb. That corn would require about two hours cooking to make it palatable. On the other hand, the green corn that had been parboiled, shelled, and dried would require much less time to cook. Frank commented that in former times the shelled and dried corn was stored in leather bags or other leather containers. In response to a question, he also stated that in the old days the Mesquakie kept their corn in underground storage pits.

The details of processing green corn as told to me by Frank and Adeline Wanatee are similar in many ways to the observations made by Juanita Pudwill, who actually shelled green corn with another family at the Mesquakie Settlement. She (pers. comm., 1979) related as follows:

> During August on the Mesquakie Settlement, green corn is gathered, husked, and parboiled in large iron kettles over the open fire in an outside open framed hut. The kernels are removed from the cob and laid out on large sheets of plastic to dry in the sun. It is then stored for winter use.
>
> At the home where I was included during the harvest in the fall of 1976, it was the uncle's job to keep the fire and pots going. The corn was put in to boil at a certain time in the afternoon to make sure that things would be ready when the children were home from school. The harvest ceremony is for all members of the family to partake in. We all gathered in the front room, most of us sitting on the floor with a large old tablecloth draped over our legs. Everyone chose a mussel shell which would fit well into the palm of his or her hand. I, being right-handed, chose the shell to fit in that hand. The conch edge lies between the thumb and forefinger, with the sharp edge down. One presses the sharp edge down in between the rows of kernels and prys them out. The kernel must not be cut in removing it from the ear. The next day, the corn was laid out to dry and after drying, it would be put in containers ready for winter use.

In this case it should be noted that the clam shell was held so that its interior surface faced towards the person shelling the corn. Thus the thumb was placed into the cavity or parallel to the hinge below the dorsal margin of the valve. The four fingers pressed in opposition on the exterior of the shell. The kernels of corn were detached from the cob with a motion that brought them towards the person engaged in shelling.

Today some people at the Mesquakie Settlement use metal spoons for shelling corn. As noted previously (p. 142), Buffalobird-woman stated that metal spoons generally replaced clam shells as corn shellers among the Hidatsa in the late nineteenth and early twentieth century. The use of metal spoons has also been mentioned above for the Mesquakie earlier in this century and for the nineteenth-century Fox. Mary Goose (pers. comm., 1979), a Mesquakie and presently an undergraduate student majoring in anthropology at Iowa State University, indicated to me that her family shells green corn with metal spoons. Frank and Adeline Wanatee, however, prefer using clam shells because, for them, the shells are easier to grasp and are less apt to cut into the kernels than are metal spoons. The Wanatees consider metal knives definitely undesirable for this purpose as opposed to this usage previously cited for the Iroquois and the Prairie Potawatomi. Metal knives, they contend, cut off the bases of the kernels. This results not only in wasting part of the corn but also in allowing the milk to flow out of the kernel. The Wanatees, and evidently most people who process green corn in this manner, want to preserve as much of the total nutrients as possible when the kernels are shelled off the cobs and dried for future consumption.

Archeological Evidence of Clam Shell Corn Shellers

The archeological specimens of worked mussel shells already referred to (p. 136) were collected at prehistoric Oneota sites along the central Des Moines River south of the city of Des Moines. These sites have been attributed to the Moingona Phase (Gradwohl, 1967; 1974:95–96), which is thought to extend from approximately A.D. 1000 to 1500, although some radiocarbon assays date before and others after that range. The Moingona Phase is known from at least thirteen components demonstrated by surface collections, two components from tested sites, and four components that were more extensively excavated: 13PK1 (Howard Goodhue site), 13WA2 (Clarkson site), 13WA105 (Cribbs' Crib site), and 13MA30 (Mohler Farm site). Since these sites are prehistoric, any ethnographic assignment is tenuous. Without opening Pandora's parfleche, my own hunch is that the people represented by the Moingona Phase were Chiwere Siouan speakers, most probably groups known historically as the Ioway or the Oto.

The archeological residue recovered from the excavated sites of the Moingona Phase represent extensive horticultural activities. The ecofactual and archeological data, along with the appropriate ethnographic parallels or analogies, indicate that, among other things, the people inhabiting these sites were engaged in the growing, harvesting, storing, and processing of corn. These infer-

ences, demonstrated below, serve as a basis for the further consideration of the clam shell artifacts and their possible function.

Corn is evidenced by charred kernels and cob fragments found at all four of the excavated archeological sites. Charred corn kernels and cobs being removed in their surrounding soil matrix from 13WA105 are shown in Figure 16. In addition, the impression of a corn cob was observed on a clay fragment collected from 13PK1. Cob fragments exhibit 8-row and 10-row maize varieties. The corn was recovered almost exclusively from subterranean features, which were sometimes basin-shaped but more often bell-shaped in vertical cross-section (Figure 18). At 13PK1, 61 of these were excavated; at 13WA2, there were 15; and at 13MA30, there were 12. Most of the

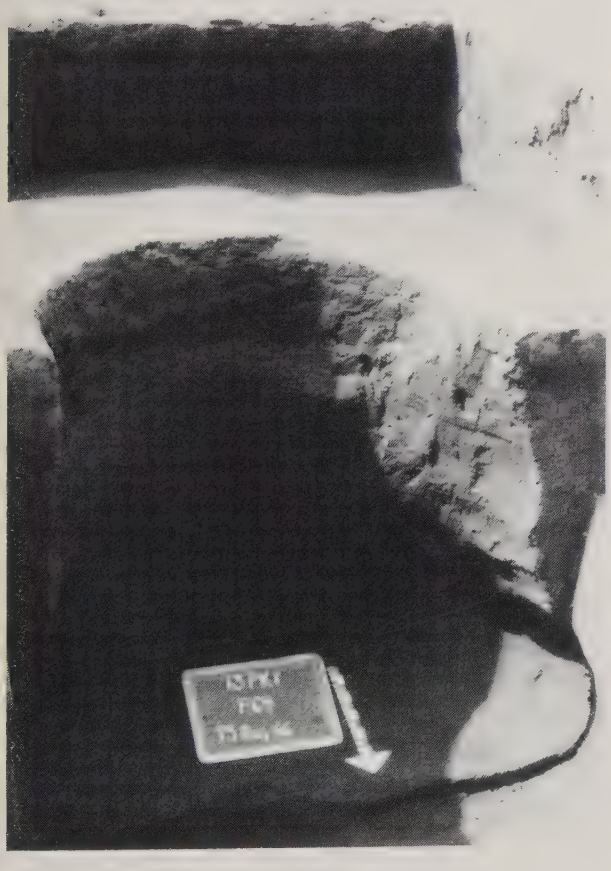

FIGURE 18.—Archeological evidence for bell-shaped storage or cache pits, feature 64 at 13PK1 in vertical cross-section, Howard Goodhue site.

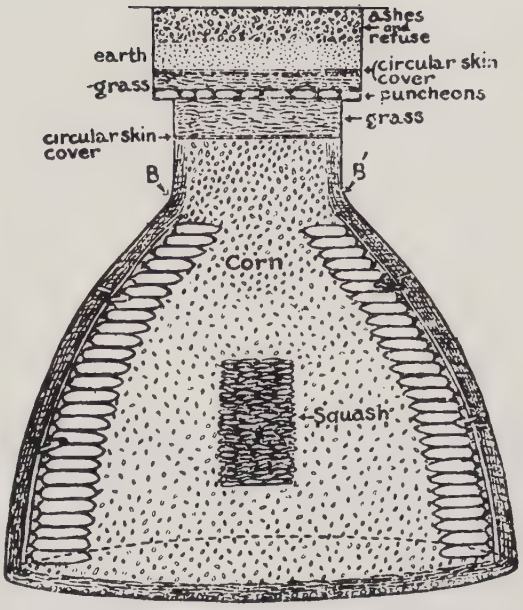

FIGURE 19.—Sketch of the Hidatsa cache pit, drawn by Edward Goodbird (Wilson, 1917:87).

151 such features discovered during emergency salvage and monitoring operations at 13WA105 were also of this type. While these features were typically filled with trash, they are considered to have functioned primarily as cache or storage pits, such as those which Buffalobird-women dug, used, and extensively described (Wilson, 1917:87–97). Goodbird's illustration (Wilson, 1917:87) of an Hidatsa cache pit is shown in Figure 19.

Artifacts interpreted as gardening tools further demonstrate that the inhabitants of these Oneota sites grew and harvested their own corn rather than obtaining it by trade, warfare, or some other means. Modified bison scapula tools are found in and around the cache pits at these Oneota sites (Figure 20*a*). These artifacts are interpreted as hoes following the ethnographic parallel provided by the Hidatsa data. Buffalobird-woman described scapula hoes and provided a model of such a tool and its hafting. Furthermore, she was photographed demonstrating how the implement was used (Wilson, 1917:12–15, 105). These Hidatsa analogies for the Oneota artifacts are shown in Figure 20*b,c*. Buffalobird-woman (Wilson, 1917:105–106) also described rakes made from

black-tailed deer antlers, which were preferred over wooden rakes:

> Of the two, we thought the horn rake the better because it did not grow worms, as we said. Worms often appear in a garden and do much damage. It is a tradition with us that worms are afraid of horn; and we believed if we used black-tailed deer horn rakes, not many worms would be found in our fields that season.

Wilson's (1917:14 and facing page) monograph included a drawing of Buffalobird-woman's antler rake and a photograph of her using the tool (Figure 21). Seven artifacts of similar form, and presumably similar function, were found in the fill of storage pits at 13PK1. Figure 22, shows an antler tool in situ in a partially excavated cache pit. A similar implement is illustrated in Figure 21*c*.

Within the above context we can now look at certain artifacts made from freshwater clam shells. Of particular interest are 53 artifacts from 13PK1. Initially, following general precedents, I

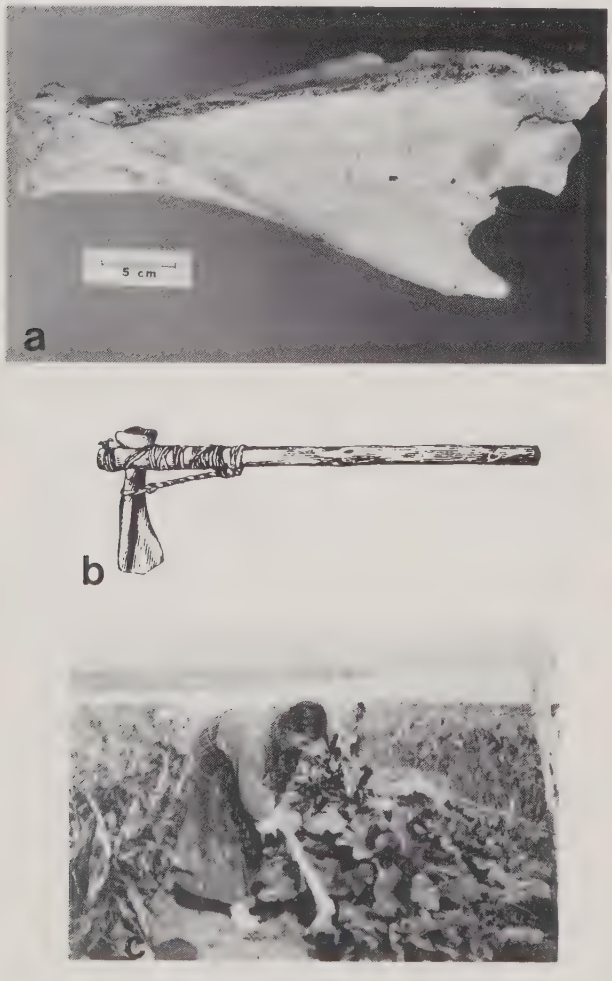

FIGURE 20.—Archaeological evidence and ethnographic parallels for scapula hoes: *a*, Scapula artifact, ISU4370, excavated from a storage pit, feature 23, at 13MA30, the Mohler Farm Site; *b*, model of Hidatsa scapula hoe made by Edward Goodbird and Buffalobird-woman (Wilson 1917:12); *c*, Buffalobird-woman hoeing squashes with a scapula hoe (Wilson, 1917, opposite p. 14).

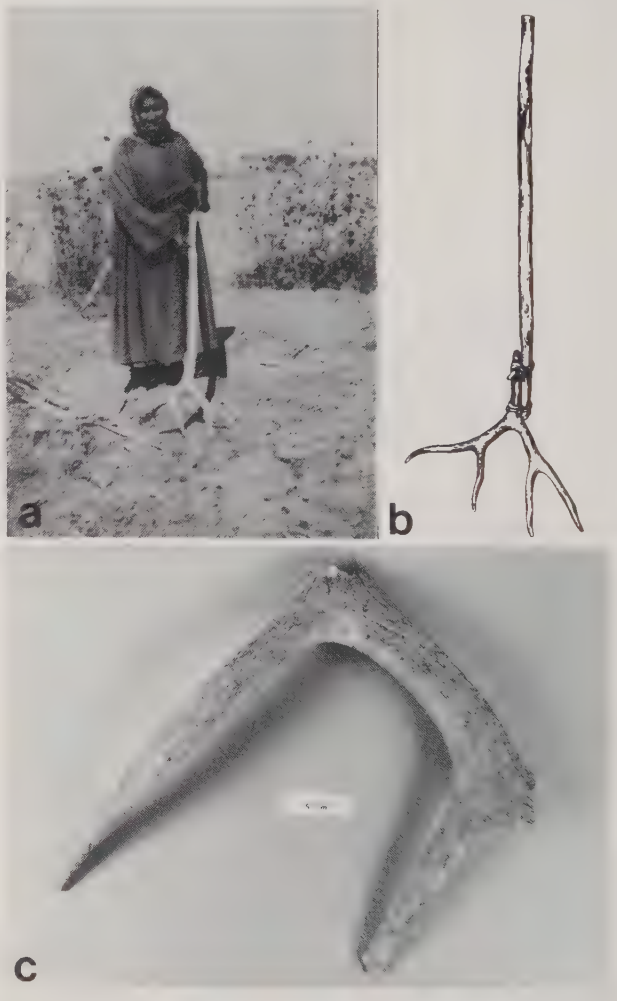

FIGURE 21.—Archaeological evidence and ethnographic parallels for antler rakes: *a*, Buffalobird-woman in field with antler rake (Wilson, 1917: opposite p. 14); *b*, antler rake made by Buffalobird-woman (Wilson 1917:14); *c*, antler artifact, ISU 11358, excavated from a storage pit, feature 1 at 13PK1, Howard Goodhue site.

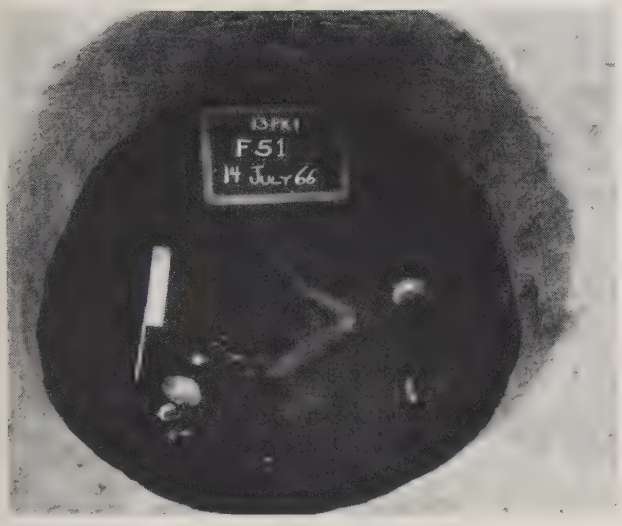

FIGURE 22.—Vertical view into partially excavated storage pit, feature 51, at 13PK1, Howard Goodhue site, showing a cut antler artifact in situ.

categorized most of these artifacts as shell "spoons or scoops." Now, given the archeological context of these objects and the systematic ethnographic parallels, I suggest that most if not all of these artifacts served as corn shellers in the processing of green corn. These objects all exhibit grinding and/or localized "flaking" along their ventral margins (Figure 23). On most of the artifacts the grinding is most pronounced at the posterior end of the valve. Grinding normally occurs also along the posterior dorsal margin, giving the tool a pointed appearance. Oftentimes the grinding is so extensive that the edge of the tool touches or intersects the pallial line on the inside of the valve. Occasionally the teeth are slightly blunted or rounded as if from use, and in a few instances apparent use is exhibited by an unnatural smoothing along the hinge line and umbo. The edges of some valves appear to have been cut prior to being ground and/or utilized.

Of these 53 clam shell artifacts found at 13PK1, 24 (45.3%) were discovered in the fill of 14 storage pits, 22 (41.5%) were recovered within the undisturbed occupational zone, and 7 (13.2%) were collected in the plowzone or on the surface of the site. Of the shells in this sample 27 (50.9%) are right valves; 26 (49.1%) are left valves. Species identification undertaken by R. Stanley Riggle shows that four species representing three genera occur in this artifact category. Of all the specimens 41 (77.3%) are identified as *Ligumia recta latissima* (Lamarck, 1819), 6 (11.3%) are *Actinonaias carinata* (Barnes, 1823), 3 (5.7%) are *Lampsilis radiata siliquoidea* (Barnes, 1823) and 3 (5.7%) are

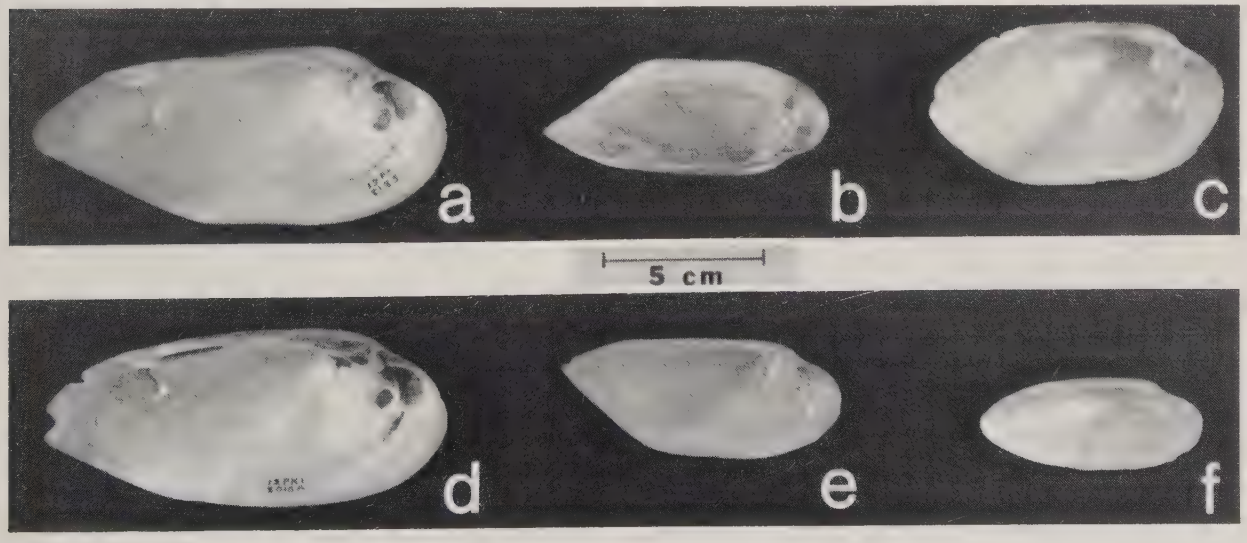

FIGURE 23.—Selected worked freshwater mussel shells from 13PK1, Howard Goodhue site. *Ligumia recta latissima*: *a*, ISU 8185; *b*, ISU 23299; *d*, ISU 8010A; *e*, ISU 23423; *f*, ISU 23455. *Lampsilis radiata siliquoidea*: *c*, ISU 23207.

Lampsilis ventricosa (Barnes, 1823). Given the geographic distribution and ecology of freshwater mussels as summarized by P.W. Parmalee (1967), all of these species appear in this region and there is no reason, at present, to assume the shells could not have been collected along the Des Moines River. Unfortunately the many unworked shell specimens from 13PK1 and the shell from other Moingona Phase sites have not yet been identified. Three other freshwater mussels species, however, have been identified in the artifacts from 13PK1: *Fusconaia flava* (Rafinesque, 1820), *Lasmigona complanata* (Barnes, 1823), and *Amblema plicata* (Say, 1819). Beyond the suggested green corn shellers, shell utilization at Moingona Phase sites includes artifacts that may indeed be spoons or scoops, larger objects that could have served as cups or small dishes, fish effigies or lures, and ornaments, such as beads and pendants. There are also cut segments of shell, which often exhibit serrated edges and/or etched designs. Most probably, these, too, are types of ornaments. Many other shells were obviously ground up as tempering for the characteristic Oneota pottery. Beyond all this, of course, we assume from the quantities of unworked valves distributed in the trash-filled pits and generally around the site, that the former inhabitants of Moingona Phase settlements may have eaten the animals inside the shells.

It is interesting to note that there appears to be no preferential selection of right or left valves in the archeological artifacts interpreted as corn shellers. As cited above, Skinner (1925:137) stated that the Sauk selected the left valves of mussel shells since they fit most comfortably in the right hand. Today, however, Frank and Adeline Wanatee use both left and right valves. It is possible that the selection of shells by individuals might be influenced by the size of the person's hand and also whether the valve is held with the concave interior surface facing towards or away from the person while the corn is being shelled. Finally, in regard to the archeological evidence for corn shelling at Moingona Phase sites, we note the presence of deer rami with cut medial ends and polished surfaces. It is quite probable that these tools served as corn shellers as documented for the historic Iroquois, Sauk, Prairie Potawatomi, and, apparently, the Pawnee. As the ethnographic literature reveals, more than one method was usually employed for shelling corn depending on the maturity of the crop and the nature of the food product being prepared. At the Moingona Phase sites, I suspect that freshwater mussel shells were used for preparing green corn to be dried and stored for winter use. Deer jaw shellers, which crush the kernels, would probably have been used for preparing foods to be consumed more immediately. I also suspect that these prehistoric people shelled dried, mature, corn by hand; but the fickle finger of archeological data cannot be pointed demonstrably in that direction.

Given the above archeological evidence, we can look briefly to some larger distributions of similarly worked mussel valves and ponder their function as green corn shellers. Perhaps the most striking parallels are two worked *Ligumia recta latissima* (Rafinesque) valves from the Nebraska Culture component at the Doniphan site in eastern Kansas. These artifacts, as described by Waldo Wedel (1959:118, pl. 5*a*), "show heavy wear along the margin opposite the hinge, as from scraping or rubbing; the posterior part of this edge has been reduced to nearly a straight line." Four similar shell artifacts were reported from the Elliott site in Cowley County, Kansas. These shells, suggested Wedel (1959:376–377; see also pl. 46, fig 2; no. 456), "may have been used as scrapers, e.g., in smoothing pots or other surfaces, or as spoons." The specimen illustrated from the Elliott site is made from the right valve of a *Lampsilis anodontoides* (Lea).

Moving on to Nebraska we can note similar shells attributed to the functions of digging or scraping tools in Pawnee (Wedel, 1936:86) and St. Helena (Cooper, 1936:77, 128–129) contexts. In South Dakota freshwater mussel valves of this form are reported from the Wolf Creek component at the Crow Creek site (Kivett and Jensen, 1976:55, pl. 43, nos. 4 and 9) and may also be represented at the Talking Crow site (Smith, 1977:93). At the Huff site in North Dakota, cut and ground mussel valves were referred to as "tools best described as scrapers" (Wood, 1967:96,

fig. 12r). Objects of possible resemblance are indicated at the Guthrey site in Missouri (Henning, 1970:83–84) and at the Blood Run and Dixon sites in northwestern Iowa (Harvey, 1979:91, 156). Finally, two cut and worn specimens that Mildred Wedel (1959:62) mentions from the Burke and O'Regan sites in northeastern Iowa may possibly be comparable forms. The point of the above fleeting summary is not to provide a detailed distributional inventory but rather to invite a re-thinking of this worked freshwater mussel shell form and its probable use in the shelling of green corn.

Conclusions

The data presented in this paper indicate that mussel shells are used today by some Native Americans in shelling green corn, that they have been used for such purposes by many Prairie and Plains Indian groups throughout a 300-year period of Euro-American observations, and that, within the strictures of archeological evidence and legitimate sociocultural reconstructions, they were used by prehistoric North Americans for at least six centuries before the European settlement of New England. If that interpretation is correct, this case provides a controlled ethnographic parallel or analogy for use in the reconstruction of past behavior patterns. The function of an individual prehistoric shell artifact can perhaps be inferred. The data presented here suggest that shells, or even metal spoons, are preferred over knives, because the former implements detach the corn without cutting through the bases of the kernels, thus preserving all the constituents of each grain. If Jones is correct that corn is considered sacred and each grain mortal, then the shelling of corn in this manner may have spiritual connotations as well.

The contemporary and the archeological data demonstrate that several different species of shell could be utilized. In the archeological sample, a distinct preference for *Ligumia recta latissima* is apparent, while three of the six contemporary Mesquakie specimens are *Lampsilis ventricosa.* Skinner's (1925:137) reference to the Sauk stated that left valves were preferred. Neither the archeological specimens nor the contemporary samples bear out this observation. Among the contemporary Mesquakie, some families apparently prepare the clam shells by sharpening the valve margins with whetstones, while other families use the mussel shells without prior modification. It also appears that two different motor functions are employed. Frank and Adeline Wanatee hold the valves with the concave interior surface away from their bodies and they detach the kernels away from themselves. Other Mesquakie seemingly hold the valves with the concave interior surface toward their bodies and pull the kernels off toward themselves. Thus in archeological inventories one might expect to find some different expressions of characteristics reflecting the different manufacturing techniques and motor habits involved in using the clam shells as corn shellers. Given favorable deposition and preservation conditions, however, some evidence of use should be observable especially along the ventral posterior margins of the shells. These data, along with the more familiar and generally accepted evidence for horticulture—corn cobs and kernels, storage pits, scapula hoes, antler rakes, etc.—imply the harvesting and processing of green corn.

Beyond that rather basic inference, with the addition of other contextual data, there are further possibilities for inferring prehistoric economic activities, harvesting schedules and procedures, and food preparation and storage techniques. Potentially even ritual practices, such as those described as "green corn ceremonies," might be inferred.

Ultimately, in my opinion, the significance of these data is of more than pedantic archeological interest. A specific technological and perhaps ideological continuity of nearly one thousand years should be of consequencee to those concerned with the study of the processes of contemporary culture change and the definitions of present group and individual identities. The retention of such elemental practices should not be taken as simple, for their real and symbolic ramifactions may be many. They are, I would argue, important reminders that, in the face of what some

scientists choose to call "assimilation," there is usually a subtle but profound retention of traditional world views and associated behavior patterns among Native Americans today.

Returning to the point from which we began this discussion, we can see some continuities that transcend change. Juanita Pudwill, having read Gilbert Wilson's study of the Hidatsa, commented that shelling corn with her Mesquakie friend and her friend's mother recalled scenes which Buffalobird-woman recounted from the nineteenth century. In Juanita's words (pers. comm., 1979):

> A game is played to see how many kernels can be removed without breaking them apart. On this particular evening, the grandmother won every time. Everyone laughed and was happy for her. The T.V. was on in the background and the younger ones were watching, but my friend and I sat side-by-side and filled our tablecloths with kernels of the beautiful red, purple, and white corn.

Discounting a few technological changes, such as the T.V. set, I suspect that the specific activity and social ambience of the front room in that house on the Mesquakie Settlement in 1976 would have been familiar and welcome to many others in addition to Buffalobird-woman and the Hidatsa—for example, to the Pawnee grandmother and Effie Blaine described by Gene Weltfish and Martha Royce Blaine, and Clara Moonlight's mother recalled to Waldo Wedel, and B.D. who told William Whitman about the Oto, and the Ioway and Sauk recorded by Alanson Skinner, and Mountain Wolf Woman who spoke through Nancy Lurie, and the Prairie Potawatomi whose images are preserved in the film *Neshnabek*, and the Fox kinspeople of William Jones, and the Illinois stepping out of the De Liette Memoir and the seventeenth century. There are many more who join in a line that extends back some seven hundred years or more. Though "on the other side" and nameless in prehistory, they have left their kindred signs in the earth.

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Bias in the Zooarcheological Record: Suggestions for Interpretation of Bone Counts in Faunal Samples from the Plains

Brian Hesse

ABSTRACT

A model of information content in archeological animal bone samples is presented as an introduction to the problem of identifying bias in the faunal record. A solution to the problem will require both attention to the assumptions implied by the use of different methods of analysis and development of rigorous quantitative models linking human behavior and natural phenomena to the archeological record.

Introduction

Waldo R. Wedel's critique of *Two House Sites in the Central Plains: An Experiment in Archaeology* (Wood, 1969) contains the following passage (Wedel, 1970:16):

> If ten bison scapulae were recognized in the refuse bone, we can infer that no less than five animals died to furnish the hoe-makings. Are we then to assume that only the scapulae were utilized and the meat was ignored? It would seem likelier that the animals were butchered at a watering place in the nearby creek valley and only the wanted meat, plus such bones and other parts as were desired for tool-making and other specific aims, were carried back to the house on Mowry Bluff.

This comment clearly reflects Dr. Wedel's deep concern for the care with which inferences about Plains human ecology are made. It also attests to his long-standing interest in the study of faunal remains, and, therefore, is an excellent starting point for a discussion of zooarcheological method. The passage distinguishes between two conflicting interpretations drawn from the same animal bone sample. In one view, the distorted nature of a bison bone sample is emphasized (almost all scapulae), an observation that leads to the conclusion that the pursuit of bison was a less important subsistence activity at Mowry Bluff than in other Plains sites. On the other hand, the relative frequency of bison bones in the collection and the nature of Plains bison processing activities is emphasized, leading to the contrasting conclusion that bison and other Plains forms were the mainstay of Mowry Bluff subsistence. Resolution of these contradictory interpretations requires an evaluation of quantitative methods in zooarcheology. Before we can answer the question about Mowry Bluff hunting, we need to understand how bone counts reflect species frequency. Since bias in these counts can arise from a wide range of sources, it is useful to preface a discussion of bone counting problems with an outline of the nature of the zooarcheological record.

The Zooarcheological Record

Several authors stress the important idea that archeological collections are samples drawn from populations of contemporary phenomena (Binford and Bertram, 1977:77; Cowgill, 1970:163;

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Sullivan, 1978:185). Excavated samples are contemporary in the sense that they contain information not just about their original makers, users, and discarders, but also about things that happened right up to the moment of study. Cowgill (1970:162–163) suggests that in order to understand archeological collections, it is necessary to think in terms of four different kinds of "populations" of information that bridge the gap in time between past behavior and the contemporary archeological record.

First is the "population" of behavior that actually occurred in an ancient society. Because not all behavior affects material objects, it is never possible to reconstruct all past behavior from archeological material. Instead, human activity is linked to the archeological record by what Cowgill calls the "physical consequences population." This second population is made up of all the modification of form and location undergone by material objects as a result of human behavior. Between the time the physical consequences population is created (tools are made, houses are built, trash discarded) and the time of excavation, numerous cultural and natural factors intervene to determine what, where, or if members of this population are interred, and if they survive (Schiffer, 1976). Cowgill (1970:163) terms this third, surviving population the "physical finds population." It is the finds population that is sampled by excavation to produce archeological collections. Successful archeological interpretation comes from an understanding of the chain of finds, consequences, and behavior. This requires that the effects of the various factors involved in the transformation between each population be understood.

The general model for extracting archeological information described in the preceding paragraph is illustrated in Figure 24. The terms on the left side of the figure are taken from Cowgill's (1970) description of the successive states of information content. The terms on the right side of the figure are taken from Clark and Kietzke's (1967) description of the categories of bias affecting the fossil record. The basic zooarcheological

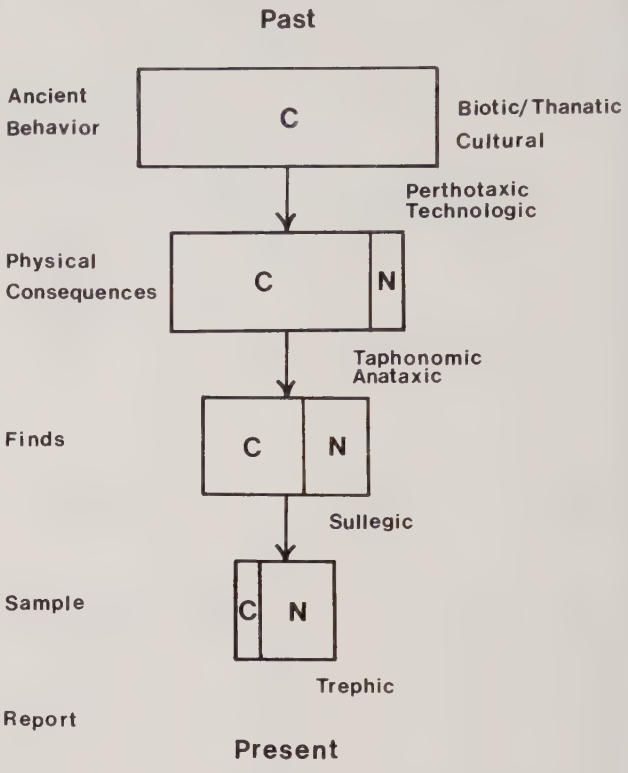

FIGURE 24.—A simplified model of the expansion and loss of information in the archeological record (C = information about human behavior contained in each state; N = information about natural factors acting on the sample since initial deposit).

problem is to find methods to estimate the various kinds of bias, so that the information in a collection can be partitioned between cultural and natural factors. The best description of this process, as it refers to animal remains, is found in the report of a South Dakota paleontological study (Clark and Kietzke, 1967). While Clark and Kietzke's discussion focuses on those factors that affect paleontological deposits, it is easy to draw parallels to cultural biases. *Biotic* factors determine which animals and plants are available in a locality and are potential candidates for burial. They are analogous to culture—the ordered set of rules that determine what human behavior occurs. *Thanatic* factors determine the probability of an individual animal dying in the locality sampled. They are roughly analogous to the variables that determine the physical consequences

population in cultural materials. With regard to archeological fauna, these would include factors that control the selection of animals for slaughter, and the distribution of meat, bone, sinew, and hide throughout a community. *Perthotaxic* factors in a fossil locality are the attritional variables that work to modify and destroy the remains of dead animals before they are incorporated into a deposit. Natural factors include the effects of climate and the depredation of scavengers. In cultural situations, such processes as the utilization of bones for tools, the pattern of bone debris discard, and the trampling and kicking of previously discarded objects add to the modification of the physical consequences population (Gifford and Behrensmeyer, 1977:245, 257–258).Thanatic and perthotaxic factors have been summarized by White (1955:401–402) as a series of empirical questions:

> 1. Did the people exercise any choice in the age of the animals they killed. . . .? 2. Which elements were brought into the camp or village and which elements were left at the kill. . . .? 3. Are the right or left, or front or hind, limb elements most abundant in any particular find?

To these technological/cultural factors should be added the perthotaxic effect of bone grease manufacture. As Vehik (1977) has shown, bone frequencies can be considerably affected by this technology.

Taphonomic factors come into play after burial (Behrensmeyer and Hill, 1980:xi). These include the attritional effects of soil chemistry, sediment movement, contact with roots, and the action of soil animals. Perhaps the most obvious of these disturbances is the action of fossorial rodents. *Anataxic* factors are those that erode out deposited fossils and destroy them. The most striking example of a cultural anataxic factor was the 20th century mining of bison bone beds (Davis 1978). Other more mundane examples include ancient site refuse or excavation for the creation of cemeteries. The combination of perthotaxic, taphonomic, and anataxic factors combine in Cowgill's terms to transform physical consequences populations into physical finds populations.

Between the fossil assemblage (or physical finds) and the collection studied are a variety of *sullegic* or sampling factors. In zooarcheology the most important of these is that archeological excavations are not designed primarily to recover evidence about the use of animals (bison kill sites are an important exception). For example, B. Gilbert (1969:292), in his study of prehistoric diet and butchering technology in South Dakota, attributes much of the difference between his results and those of White to the fact that

> the bones analyzed for this project were collected as a standard procedure during excavation of sites, primarily of houses, rather than trash heaps. Indeed the enormous bone deposits at some sites known to the author would in themselves fill all the work space in most museums, and to collect it all would be a tremendous work task. However, more extensive excavations or trash heaps are necessary to gain an unbiased sample.

Because of the lack of zooarcheological input into research designs, there is often no clear theoretical relationship, definable in cultural terms, to link sample and finds, or more than a general feeling for the kinds of bone material missed. The second kind of sullegic bias is a product of excavation technique. In discussing the Wittrock Mill Creek Culture site, Semken (1971:111) notes: "The smallest bone in the recovered sample is slightly in excess of one half inch and most are well over an inch. Isolated teeth, vertebra, and foot bones of identified rodents were not recovered. This suggests that voles, mice, and shrews may be missing because of their small size and sampling technique." Also, sorting recovered faunal material into "identifiable" and "unidentifiable" fractions, then discarding the latter, leads to considerable bias when the sorters are either little trained or have widely different ideas about the meaning of the term "identifiable" (Falk, 1977:154).

Between a collection and a report stand a body of *trephic* or curatorial factors. The most important of these is that individual bone fragments are not equally identifiable in all collections. For example, in Plains collections of historic date, cattle, sheep, goats, pigs, and horses may be pre-

sent alongside the indigenous wild taxa. Bone fragments from these domestic species can easily be confused with small fragments of bison, antelope, or deer. Because of the more complex zoological picture, it is more difficult to assign a bone fragment to a taxon purely on the basis of size. As a result, bone counts are likely to be reflective of historic and prehistoric situations in different ways. In general, the number of bone fragments identified as belonging to a species varies with the number of potentially misleading forms in the sample, the ability of the zooarcheologists to observe the distinctions, and the variability of the distinctions themselves.

Figure 24 is an attempt to illustrate the interplay of all these biasing factors and the correspondence between Cowgill's model of cultural information and Clark and Kietzke's discussion of fossil assemblages. Overall, the information content of a collection tends to decrease with time, while the interplay of cultural (C) data and natural (N) data becomes more complex. Since the features observed in a faunal sample must be partitioned between cultural and natural factors in order to interpret past behavior, the transformation processes that change one level into another are of central interest to zooarcheologists.

Sullegic Bias

It has been amply demonstrated (Clason and Prummel, 1977; Thomas, 1969; Watson, 1972) that the technology of collection—screening, water sieving—can markedly affect the number and size of bones collected (Semken, 1971:111). To estimate sullegic bias, it is necessary to determine what part of the potential finds are not being adequately collected. Watson (1972) demonstrates that each collection technique is associated with what he calls a "critical size." A critical size is the smallest size a fragment can be and still be certain to be recovered by the collection technique employed at the excavation. Critical size can be determined empirically by examining a histogram that shows the frequency distribution of the different bone fragment sizes found in an excavation. Above the critical size, the distribution will form a smooth curve; below, it will drop to much lower values and the curve will be sharply irregular. Another important variable in analysis is the "minimum size." This is the smallest a fragment may be and still be identified as to what kind of bone it was and to what kind of animal it belonged. For a single species this trephic variable changes from collection to collection based on the number of potentially confusing forms encountered. Obviously, minimum size is larger with larger animals.

It should be possible to use the concepts of critical size and minimum size to design an excavation sampling scheme. If on the basis of historical information relating to the site, ethnographic considerations, or previous archeological experience in the region, it is possible to determine what species are likely to be important for cultural interpretation, a screen size can be chosen that is small enough to capture a critical size less than the minimum size for the species of interest. For example, if the quantitative relationship between antelope and bison is deemed to be the primary zooarcheological statistic of interest, a screen size would be chosen that is larger than would be required to detect reliably the quantitative relationships between rodent taxa. Adoption of this strategy, however, while it may satisfy an immediate goal of speeding up excavation, carries with it the responsibility of explaining in the future why potentially retrievable information was ignored.

More importantly, the same relationship can be used to salvage information from collections obtained under less than ideal sampling conditions. If the collections of interest are sorted in a nested set of graded screens, it would be possible to determine their critical sizes. A collection of unsorted faunal remains can be passed sequentially through a set of graded screens. The resulting sized subsamples can be analyzed quantitatively to determine empirically the collection's critical size. Information about smaller species would be lost, but at least the bone counts reported for the larger forms would be comparable

between sites. Since so much of Plains zooarcheology is bison dominated, such a procedure could generate a significant amount of information from older collections, information that could be compared to data from the most intensively excavated site.

Both Watson (1972) and Thomas (1969) describe how adjustments can be made where part of the site is still available for intensive excavation. These techniques use the frequencies derived from small, intensively collected subsamples to create recovery factors relevant to different sizes of bones or animals. The recovery factors are then used to adjust the frequencies of the non-intensively collected sample. One should be cautioned that this procedure makes strong assumptions about the homogeneity of the deposit. Falk (1977:154) cites some examples from the Plains where this kind of adjustment would be an unwise procedure:

> Frequency distributions for major classes plotted by provenience unit (outside house, roof/floor fill, subfloor pit etc.) at Jake White Bull revealed a "differential distribution of both fish and amphibian remains, with the great majority of each class occurring in subfloor pits . . . ." Evidence from the Walth Bay and Bower Grand sites demonstrate similar patterns at comparable recovery levels . . . .

The data from Mowry Bluff (Falk 1969:45, table 8) also show definite intrasite variability, since one deposit, feature 7, has a very different assemblage compared to the rest of the site.

Estimating the Finds Population

The most common statistic employed in zooarcheology is the Minimum Number of Individuals (MNI) (see the discussions in Bökönyi, 1970; Casteel, 1977; Chaplin, 1971; Daly, 1969; Grayson, 1973, 1978; Holtzman, 1979). MNI is equal to the frequency of the most abundant bone type (humerus, radius, etc.) in the subsample of bones assigned to a particular taxon. It represents the smallest number of animals necessary to produce the sample of bones observed. MNI has often been cited as the best estimator of species frequency in the finds population (e.g., Butler, 1974:97; Falk, 1977:153), and it is the statistic implied in the passage that introduces this paper. Nevertheless, some aspects of the use of the statistic in the analysis of the finds populations of habitation debris can be called into question. Unfortunately, the exact method of calculating MNI is not often spelled out in reports. An important exception is contained in the excellent report of Parmalee (1977) on Plains avifauna. Because it illustrates well important points about MNI, his procedure is cited here in detail (Parmalee, 1977:193):

> The minimum number of individuals represented by each species was determined by selecting the element which was the most numerous in the site sample, e.g. a right humerus, a left femur, and so forth. Once this number was obtained, the elements were then compared with those of the opposite side to determine if any were paired; those which could not be paired were added to the total MNI. In some instances when the MNI was based on a particular element from all adult birds and a juvenile was represented in the sample but not by that particular bone, it was obvious that another individual should be added to MNI. The assumption was made that the individuals represented at each site were unique to that site and that parts of one bird would not, in all probability, be encountered in two or more sites. To illustrate, remains of the turkey vulture occurred in seven sites and it was assumed, therefore, that at least seven individual birds were represented. If all 18 elements had been considered together, however, the MNI would have been three based on the carpometacarpus.

Several objections can be raised about the use of MNI. The variance associated with MNI is larger than that associated with other estimators of finds populations (p. 166), mostly because it uses only part of the bone elements assigned to a taxon to estimate frequency (Holtzman, 1979:86). Much more important is the point that by focusing attention on the relative abundance of whole animals, the MNI statistic makes an assumption about the relationship of the finds population to the consequences population. It can be argued that a few bones do not necessarily represent the original deposition in the *site area sampled* of a whole animal (what Wedel (1970) was wrestling with in his review of the Mowry Bluff sample). Use of rates for whole animals implies an assumption that the finds collection represents a taphon-

omic transformation of a consequences population composed of whole animals. Such an assumption is probably not warranted in many midden samples. For instance, Pitts (1979:37–38) has recently suggested that antler counts may be a poor estimator of the frequency of deer carcasses at Star Carr since antlers were scavenged for manufacture into tools. A general statement describing the nature of the problem is provided by Binford (1978:477–478):

> Faunal assemblages are commonly the consequences of multiple segmental strategies ultimately converging on locations where consumer or social utility concerns dominate . . . . Faunal assemblages are commonly compounded populations resulting from multiple decisions made about anatomical segments, not animals.

These observations help to focus the conflicting interpretations of the Mowry Bluff sample. Clearly, the excavation concentrated on areas where "consumer activity" dominated—as Falk (1969) indicates, the bison and deer samples mostly contain tools or the raw material for tools. Kill and processing areas were not encountered. The animal segments represented are a selection drawn from whole carcasses. Gilbert's (1979) analysis of the effect of selection for tools on faunal assemblages indicates that these selected segments may be poor estimators of either diet or animal mortality. A positive conclusion that should be drawn is that the Mowry Bluff bone tools should not be used in frequency estimation (for a similar conclusion, see Hesse and Perkins, 1974), and that other bone types would be better indicators. Second, the specialized nature of the Mowry Bluff samples indicates that only one part of a sequential animal use strategy spread over several site locations was recovered archeologically. Therefore, it is invalid to speak of a total number of animals, as is possible in many bison kill sites. The frequencies measured by bone counts of midden deposits are *relative* values. An unanswered question is whether the sequential animal use strategy of this part of the Plains was unilineal or radiating. Very different interpretations would have to be put on a sample if, instead of one kill site serving one processing site that serves one consuming site, the pattern was dendritic, with one kill site serving the needs of several consuming sites.

A second measure often employed to estimate the frequency of a species in a deposit is the total number of bone fragments assigned to that species (E). An important trephic bias affects this estimator. If one species can be recognized from many bone elements, while another can only be recognized from a few, the likelihood that an individual animal of the first species will be counted is enhanced. The error associated with this kind of bias can be avoided by compiling a hierarchy of comparisons for the different taxonomic categories used. For example, if in a collection containing three taxa, taxon A can be distinguished from taxa B and C for every bone type, but B and C can only be distinguished on the basis of mandible morphology it is more accurate to use a pair of ratios A : B + C and B : C to express species frequency, than a single ratio A : B : C.

Interdependence is another source of bias in total specimen counts (Grayson, 1973:432; Lyman, 1979:536). Counting the different parts of the skeleton together creates the possibility that a single carcass will actually be counted more than once. Just how important a bias interdependence is depends on the kind of site that is excavated (how many of the end products of the total cultural inventory of multiple sequential strategies are represented in the sample) and the size of the sample with respect to the actual finds population. At one end of the spectrum are kill sites, where single short episodes of slaughter create the physical consequences population. Because sample size is large and geological observations indicate a majority of the original deposition was recovered, interdependence is extremely high. On the other hand, when the sample studied is small, and the site is large and was occupied for a long time, the probability of interdependence is related to the size of the area over which the bones of a typical carcass eventually come to rest—the degree of technological and perthotaxic disarticulation—and the kind of sam-

pling scheme used. The problem of interdependence is most significant when the taxon estimate is taken as a quantity rather than a proportion. When taxon frequency based on E is taken as a relative figure, interdependence is significant only when different species have different degrees of this bias.

With regard to fossil assemblages, Holtzman (1979:81–82) has made these remarks about taxon estimators and interdependence:

> It is unfortunate, I think, that the abundance of the most abundant element has come to be known as the minimum number of individuals because the latter term leaves the impression that there is something intrinsically important about the minimum number of individuals. Its conceptual insignificance can be appreciated by imagining that specimens originating from a single once living individual could somehow be recognized with certainty. For a great many fossil assemblages the resulting *true* minimum number of individuals would equal or nearly equal the number of specimens. The MNI estimate would then converge on frequency of specimens, the very estimate that it was designed to avoid. The common origin of two specimens from a single once living individual is only of interest when the sampling procedure is biased so that the collection of one such specimen increases the probability of collecting the other. The relationship of MNI (or any other estimate) to this sampling bias remains largely unknown.

The guess that true MNI probably approaches total count is considered a reasonable assumption for faunal samples from Near Eastern tells (Hecker 1975; Hesse and Perkins, 1974; Perkins, 1973). An example that can be used to extend this opinion to North American sites has been presented by Guilday (1970) for historic Fort Ligonier, Pennsylvania. For the Plains, B. Gilbert (1969:286, table 7) provides an instructive example. From ethnographic data, he calculated the bison meat consumption of a typical villager at two pounds per day. He then calculated the total amount of meat represented by the MNI for bison based on the samples recovered from a single site. Depending on the length of occupation and the number of inhabitants visualized (Gilbert offers three scenarios), the sample recovered only accounts for between 2 and 6 percent of the bison meat required.

If interdependence affects the sample for the various species in a site differentially, it would be very important to measure this effect. Such a procedure has long been carried out in Plains bison kills, but rarely has it been considered for midden sites anywhere. Exceptions include Poplin's (1975) painstaking reconstruction of bone fragments that led to his discovery of discard units in a trash heap. Coy (1977:129) offers the least mechanical approach to the problem of interdependence. She describes a value called the "probable number of individuals," which is defined as "a personal estimate of the actual number of animals represented, arrived at after detailed study of the bones themselves and the groupings in which they were found." This procedure is analogous to that described by Parmalee (1977:193) in the corrections he makes to MNI based on age considerations, though his final assessment indicates he feels that interdependence is high in the collections he studied.

Schram and Turnbull (1970:3) stated in the introduction to their study of the Broom Cave fauna: "In order to arrive at an estimate of the actual size of a sample that is comprised largely (or entirely) of very fragmentary materials, a means of confining and restricting the spread between the assessments of maximum and minimum numbers of individuals must be found." They propose the calculation of two values in addition to MNI. One is the "age spread minimum number of individuals," which is calculated in the same way Parmalee calculates MNI. The other value is the "minimal estimate of the maximum number of individuals." This value is arrived at by defining skeletal portions likely to be preserved as units based on an understanding of the nature of the deposit. This procedure is related to the point made by Binford (1978:478), that anatomical units are what are processed by cultural systems. White (1956:402) points out, "In certain groups the parents and grandparents of the man and wife customarily received specific elements of the carcass such as the left front leg." It is possible to elaborate on ethnographic observations, such as White's, to create a list of anatomical parts likely to be interdependent and to

use statistical techniques to test for them empirically (e.g., Binford, 1978:88; Reher, 1977:33, for bison processing).

Grayson's (1973) contrast between minimum and maximum distinction methods in the calculation of MNI corrects for interdependence on a locational rather than an anatomical basis. He notes that MNI values for taxa in a whole sample are larger when calculated by summing subtotal MNI for each excavation unit than when calculated by taking the whole site sample together. By reducing the number of stratigraphic distinctions used in making the calculation, the size of the site area seen as likely to produce interdependent specimens is increased. By making the number of stratigraphic distinctions large, on the other hand, the zooarcheologist implies his conviction that interdependence is limited to small site areas. This is precisely the operation Parmalee is performing when he sums the MNI for birds across sites. He implies a lack of interdependence between sites but strong interdependence within sites. Krantz (1968) also has proposed a method for estimating species frequency by using a kind of a measure of sample interdependence. He suggests that the proportion of pairable right and left bone fragments of the same element type (e.g., the number of cases in which it can be shown that pairs of right and left mandibles came from the same individual) compared to the total number of fragments of that element is related to the proportion of the whole finds population that is actually recovered. Krantz's equation relating the number of pairs to the number of animals in the finds collection is a hyperbolic relationship (Casteel, 1977). At low levels of pairing, an enormous change in the estimated number of individuals is produced by a loss or gain of one pairing. Since in practice it is extremely difficult to establish pairs, the potential for error in a sample of low interdependence is tremendous.

Considerable attention has been paid to the relationship between MNI and total fragment count E. For instance, Casteel (1976–1977) used a sample of 610 pairs of data (MNI and E), drawn from a wide variety of archeological and paleontological studies. By plotting MNI against E, he produced a curvilinear relationship when E is less than 1000 specimens and a linear relationship when E is greater than 1000 specimens. Grayson (1978) and Ducos (1975:42, note 1) have also reported a curvilinear relationship. Casteel (1976–1977:142–145) has provided a succinct summary of other analyses. King (1978) also plotted the relationship of MNI to E for a wide variety of sites but partitioned his sample into subsamples composed of the values for cows, pigs, and sheep (King, 1978, fig. 2).

This observation has led some workers to the conclusion that MNI values cannot be compared when the difference between the size of the samples used to compute them is great. This conclusion is in error. The nature of the MNI statistic does not imply this curvilinear relationship. The slope of the line that relates MNI and E for any group of samples is controlled by the probability of recovering the most common type of bone element. In cases where only one element type has distinctive morphological features permitting the identification of the taxon, the slope of the plot MNI to E for a group of samples of this taxon is equal to 1. No matter how big or how small the sample, each bone fragment identified necessarily increases the MNI by 1. In taxa where several element types have distinctive morphological features the situation is more complex. The upper limit of the slope is 1; the case where, despite the fact that there are several potentially recognizable bone element types, only one type is actually recovered. The lower limit of the slope is defined by the situation where each of the possible element types are found in equal proportions. On the average, one of each of the element types accumulates in the process of identification before the MNI increases by one. Figure 25 illustrates this range of potential slopes for a species with 10 potentially identifiable element types. The upper limit of the slope is shown by "a": each bone fragment identified for the taxon is the same kind of bone element. The lower limit is "b": all 10 element types are found in equal proportions. As the number of identifiable bone elements in-

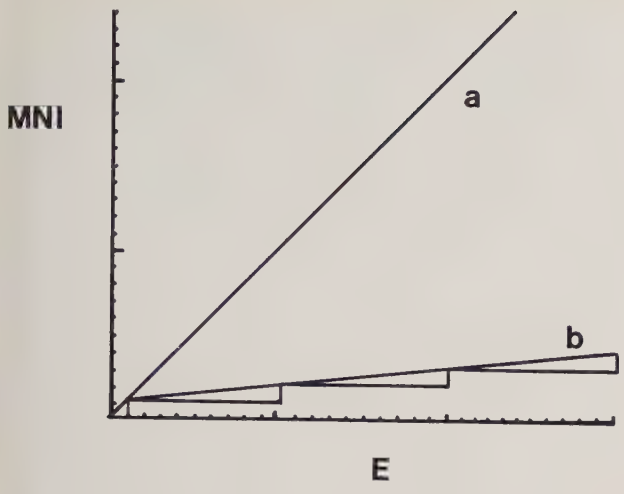

FIGURE 25.—The extremes of the possible relationships between minimum number of individuals (MNI) and total fragment count (E) (a = relationship when each species is represented by one bone type; b = relationship when each species is represented by ten bone types).

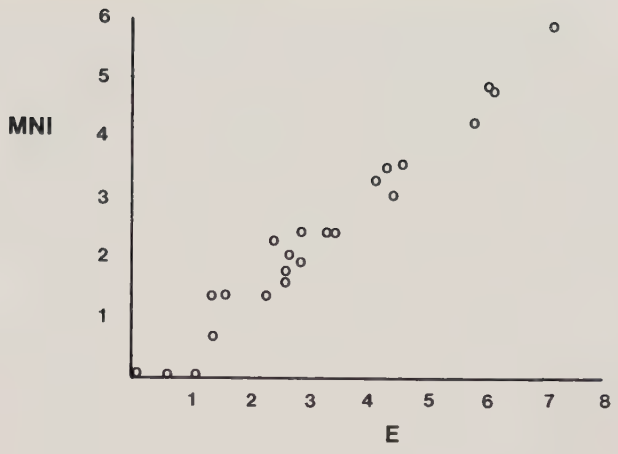

FIGURE 26.—Plot of the relationship between MNI and E for a series of bird-bone samples from the Plains (Parmalee, 1977). The relationship is linear because the effective number of elements per individual (ENI) for all the samples falls within a very small range.

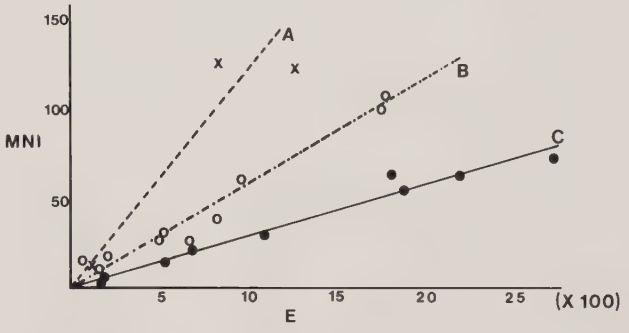

FIGURE 27.—Relationship between MNI and E for a series of caprine samples from three Near Eastern tells (X = points for the site of Godin Tepe (A. Gilbert, 1979), which produce the line A; 0 = points for the site of Beidha (Hecker, 1975), which produce the line B; dots = points for the site of Tepe Ganj Dareh (Hesse, 1978), which produce the line C; units of E should be multiplied by 100).

creases, the lower limit "b" gets closer to the X-axis. In practice, bone element types are not found in equal proportions, and the position of a sample within the pie-shaped range is controlled by what Holtzman (1979:78) has called the "effective number of elements per individual" (ENI). For instance, if one of the 10 element types in the example actually turned up as 25% of the samples, then the ENI would be 4 and the slope of the relationship between MNI and E would have a rise of about 1 in 4 instead of 1 in 10. Therefore, any deviation from a straight line in the relationship between MNI and E is due to a change in the probability of recovering the most common element type.

Some empirical evidence can be produced to show that this is the case. If the MNI and E values for all the bird samples in Parmalee's report (1977:199, table 3) are plotted, the linear configuration in Figure 26 results, indicating that the effective number of individuals for the different taxonomic groups in the samples does not vary greatly. For other kinds of fauna the situation is somewhat different. Computing the ENI for bison in the three samples published by Gilbert (1969:283, table 4) yields the following three values: Woodland, 6.9; Middle Missouri, 14.5; Coalescent, 14.2. Adding values calculated from Calabrese's (1972) study, 37.7 (his table 13), and 48 (his table 15), one can see evidence of what would appear to be a highly variable relationship between sites. In Figure 27 the relationship between MNI and E for the caprine samples for three Near Eastern tell sites are plotted. Each of the distributions can be approximated by a straight line. This suggests that the effective num-

ber of individuals per taxon is consistent within a sample though differing between sites and not controlled by sample size. What varies between the sites is the pattern of skeletal recovery. In the case of the Near Eastern samples, the distribution of the different bone types within each site's subsamples are similar. In the case of the bison samples reported by B. Gilbert (1969:283), this is clearly not the case. The Woodland sites have a relative absence of toe bones compared to the Middle Missouri and Coalescent sites. The result is widely different effective numbers of individuals. The point of these comments is to demonstrate that the curvilinear relationship produced empirically by a plot of many MNI/E combinations does not reflect patterned bias in the way either estimates a consequences population of whole animals. It is possible to say that any factor that (1) increases the number of categories of element types (a trephic factor like the discovery of new morphological distinctions); (2) increases the recovery rate of small bone fragments (a sullegic factor like reducing screen size); or (3) changes the skeletal recovery pattern (a cultural factor like a change in the location of animal processing activities) will vary the relationship between MNI and E. Whether either effectively mirrors the finds population is a separate question.

Another method of estimating taxon frequency in the finds population has been proposed (Gilbert and Steinfeld, 1977; Hesse and Perkins, 1974; Holtzman 1979; Perkins, 1973; Wapnish et al., 1977). It attempts to overcome one weakness of the MNI approach by using a greater proportion of the sample, and one weakness of the E approach by correcting for the variable number of elements identifiable in different species. Called the weighted abundance of elements (WAE) by Holtzman (1979:80), and relative frequency (rf) by Perkins (1973), it is calculated by dividing E by the number of bone elements that are potentially identifiable in a species skeleton. Two choices exist in the way the division is done. With one, E is divided by the number of element types that are actually present in the sample. This is roughly equivalent to an average MNI. Each element type is considered an estimator of relative species frequency. Taking the average minimizes the risk associated with a single element estimator (roughly the comparison between a mean and a mode as a measure of central tendency). With the other, E is divided by the potential number of identifiable element types, whether or not they are actually represented in the sample. With both choices it is recommended that element types with extremely low frequency of recovery be omitted from both values in the calculation. The first choice reflects the view that only a portion of an animal's carcass, in many cases, is likely to be consistently interred in a cultural deposit (for instance, only foot bones) and that calculations using the second method would underestimate taxon frequency. The second method reflects the view that, in general, whole carcasses are interred in cultural deposits, and it is the effects of attrition that reduce the number of element types recovered. Since the rf estimator is prone to error from differential preservation, it is critical that the divisor be chosen with some consideration of what the choice implies about preservation.

Holtzman (1979) has compared the performance of rf/WAE and MNI in a series of computer simulations. He concluded that "in all simulations the WAE estimates showed generally smaller mean squared errors than the MNI estimates, even under most conditions where the WAE bias was larger than the MNI bias."

Where the distorting effects of natural or cultural factors are suspected to be large, it is advantageous to dispense with trying to estimate the taxon frequency in the finds or consequences populations. Procedures of this type have been described by Binford (1978) and Lyman (1977; 1979). These approaches consider faunal remains as animal parts rather than as whole animals. The potential resource value (in terms of meat, fat, sinew, grease) is estimated for each bone fragment type and multiplied by the bone element frequency. The output of this kind of analysis is a description of the resources represented, not an estimate of the proportion of each species

taken to contribute to the economy.

Applying these observations to the Mowry Bluff sample leads to the following conclusions. The 229 bison scapulae and the 6 deer metapodials are rejected as estimators of species frequency on the grounds that they owe their presence in the site to their selection as tools. Twenty-five of the remaining bison bones are assumed to be interdependent but none of the deer bones. Of the non-interdependent, nonspecially selected bone fragments, 25 are bison and 10 are deer. In each case the bones fall into eight skeletal categories. It would seem, therefore, that on the basis of this very small sample, conservatively, bison were more than twice as frequent as deer. The contrast would be even stronger in an animal parts analysis.

Perthotaxic, Taphonomic, and Anataxic Bias

Vehik (1977) has considered the perthotaxic implications of bone grease manufacturing on the Plains and has produced a model of the kinds of bone fragments likely to be recovered. She (1977:171–172) concludes that, in addition to large quantities of fingernail-sized bone chips, there should be an absence of legs, feet, ribs and vertebra, with the possible exception of the articular ends of the long bones. However, she observes that bone chips are not only found in bone grease manufacturing sites. As an independent test for the ancient presence of this technology, she proposes that the organic components of bone chips, which are boiled, and articular ends, which are not, be compared. It should be remembered, however, that the shafts and articular ends of long bones start out with collagen fractions that are somewhat different.

Nonhuman perthotaxic factors have also been modeled. In general, once a bone fragment is discarded it begins a transformation that will eventually lead to its disappearance (or its transformation into a fossil). In the presence of an attritional agent, erosion is probably slow at first, then increasingly rapid as the bone's integrity is lost (Binford and Bertram, 1977:113, figs. 3, 10; Brain, 1976). The denser the original bone fragment, the longer the disappearance takes (see Behrensmeyer, 1978, for a discussion of bone weathering). This observation has led Binford and Bertram (1977) and A. Gilbert (1979) to predict that some of the variance in observed bone frequencies compared to the proportion of element types in a living animal must be the result of the differing density of the various bone elements. The relationship is extremely complex. Imagine a situation in which an equal number of several different bone elements are exposed to an attritional agent. Each will tend to disappear at a different rate. Because of these different rates, the frequency proportions between the different bone types will constantly change with time. Binford and Bertram (1977) have developed a mathematical model of this sort to predict the proportions for the different elements of sheep and caribou skeletons found on Navajo and Eskimo sites after attrition by dogs.

A start has been made in modelling the taphonomic conditions affecting bone deposits. Buried bone undergoes gradual chemical alteration that leads to a loss of physical integrity. Hare (1980:218) conducted a simulation of the leaching process, and concluded:

> Qualitative observation during the simulation experiments showed that, as water reacted with the protein in the bone fragments, the bone fragments became progressively chalkier and easier to break apart. Samples that had been leached extensively were generally easy to crush and cut. In the early stages of the reactions where collagen was still present, the fragments would show the intact pseudomorphic ghosts of the bone fragments. Bone strength and hardness appeared only slightly less than that of fresh bone material. As the reactions progressed the pseudomorphic ghosts looked progressively less intact until there was no longer any pseudomorph left—only a few scattered fragments of organic material. At this stage there was substantially less strength and hardness left in the bone fragment. The fragments were somewhat chalky and easily crushed with the fingers.

Evidence now exists (D.W. Von Endt, Smithsonian, pers. comm.) that indicates that organic preservation is quite variable among bones of the same type and species in the same site. In the author's examination of a very small sample of

bones recovered from Deer Creek, Oklahoma, it was clear that some of the bones were in a fragile state of preservation. The eventual interpretation of bone material excavated from that site will require consideration of the effects of chemical attrition.

Anataxic factors have been described for fossil localities (e.g., Hanson, 1980; Wolff, 1973), but similar models have not been produced for cultural materials.

Biotic, Thanatic, and Cultural Bias

Much of the work done in the Plains recognizes the effects of these biases on bone assemblages. Semken (1971; 1974) has worked extensively to reconstruct the biotic communities in which the Plains peoples lived through the analysis of microfauna found in their sites. Considerable effort also has been expanded to understand the history of bison on the Plains and how it affected the zooarcheological record (e.g., Dillehay, 1974; Gordon, 1979; Gunnerson, 1972). One of the most extensive sections of the literature deals with thanatic bias. Bone remains from numerous bison kill sites have been published and the evidence analyzed for patterns of selective hunting and butchering techniques (Davis and Wilson, 1978).

Two smaller topics can be used to illustrate the process of estimating cultural bias. Ubelaker and Wedel (1975:450–451) suggest "that cut bird skulls, wing and leg bones, and perhaps talons found in such deposits, particularly if in close proximity to one another, may indicate one-time medicine objects rather than the by-products of the more mundane food quests." Parmalee's (1977) report provides an opportunity to examine this suggestion. If bird carcasses were being processed to provide skin, head, and talon ornaments, it would be expected that bird skeletons would be differentially preserved in habitation debris. In particular the leg bones of the raptors would be preserved as would their skulls and the skulls of crows and ravens. The axial skeleton would be underrepresented. The data presented in Parmalee's report (1977:208, table 4) were regrouped for the four most common bird families into four skeletal parts: skull, axial skeleton, wing, and leg (Table 2). The chi-square statistic computed for Table 2, 73.4, indicates that the variation in the table entries is greater than would be expected from random variation. The table shows that the three largest deviations from expected values are the abundance of crow and raven heads (Corvidae), the abundance of hawk and eagle legs (Accipitridae), and the relative lack of duck, goose, or swan feet (Anatidae). The abundance of crow and raven heads and hawk and eagle legs agrees with the suggestions made above, and indicates that differential processing activity can be preserved in the faunal record although such other potential biases as sullegic or trephic factors cannot be rigorously excluded. In addition, while the values do not vary between species, the number of bones of the axial skeleton is small for all forms.

Wedel (1970:17) mentions the hunting of rodents on the Plains:

TABLE 2.—Distribution of the skeletal parts for four bird families on the basis of samples studied by Parmalee (1977:208, table 4) (O = observed; E = expected $X^2 = 73.4$)

Character	Anatidae			Accipitridae			Tetraonidae			Corvidae		
	O	*E*	X^2	*O*	*E*	X^2	*O*	*E*	X^2	*O*	*E*	X^2
Skull	16	15.2	0.04	32	35.5	0.35	2	11.3	7.6	26	14.1	10.2
Axial skeleton	27	20.0	2.5	42	46.7	0.47	14	14.8	0.05	17	18.5	0.12
Wing	339	294.5	6.7	633	688 6	4.5	220	218.5	0.01	282	272.4	0.34
Leg	71	123.3	22.2	352	288.2	14.1	100	91.5	0.80	94	114.1	3.5
Total parts observed	453			1059			336			419		

Among the historic Comanche prairie dogs and ground squirrels were often the first wild game sought by small boys learning the use of bow and arrow and developing hunting skills . . . . The surprising abundance of prairie dog bones at Medicine Creek reservoir sites suggests that the animal may indeed have been a regular and accepted supplemental food item along with pocket gophers and jackrabbits.

T.W. Clark (1975:72–73) provides the following ethnographic description of a prairie dog hunt:

They hunted prairie dogs. When it rained good, a real heavy rain, they'd go out and hunt the prairie dogs. They would go to their town and they would find a little pond close to that. They dug a ditch toward the prairie dogs holes, and they helped each other. They dug the ditch, and water would flow into the holes. When bubbles started coming up, the dogs would come out. The little and the big ones. Some of them, that were about two months old. That was the size they liked. The dogs would come and see them, and then jump back into the water. When the dogs came out, they could catch them and wring their necks by swinging them around their heads. They threw them over in the weeds. The big ones could bite, but the little ones don't bite much. They were afraid of the big ones. They went along from hole to hole. When they had killed about five or six, they would take them and build a big fire. They would throw the dogs in it, and singe off the fur. They scraped the dogs real smooth. They cut the neck and split the dog lengthwise in two. They cleaned it real good, like a rabbit. They could boil it. These dogs don't eat nothing rotten, they just eat clean things, some kind of sour that grown there in their town.

In winter time, the dogs used to live on nuts, they would bring them to their holes one at a time. Nuts and walnuts, sometimes, they would float up in the water. Maybe, I ate them when I was a little girl, but I don't know.

The difficulty with prairie dogs, pocket gophers, and other fossorial animals is that it is hard to determine whether the bones of these species found in archeological sites are intrusive or not. Wilson (1973:232) has suggested that the adaptation by Thomas (1971) of Shotwell's (1958) distinction between distal and proximal taxa may be a way to make the determination. Shotwell argued that animals which died close to the point of deposition (proximal species) are more likely to be represented in a sample by most of the elements in their skeletons; those that died at a distance from the point of deposition (distal species) are likely to be represented by only a few elements. Thomas argued that species that are utilized by human groups are likely to appear to be "distal," represented by a few selected skeletal parts. The description given by T.W. Clark (1975:72–73) of prairie dog hunting would indicate that the head was discarded before the carcass was cooked. The skin would travel a different technological pathway than the edible part of the carcass on the basis of Wedel's (1961:143) description of a prairie dog skin bag. The boiling of the butchered prairie dogs would likely reduce the rest of the skeleton to a state where the bones either could be eaten or would have much reduced resistance to depositional conditions.

The passage quoted above (T.W. Clark, 1975:72–73) is strikingly similar to a description given the author in South America of the exploitation of a behavioral analog of Plains fossorial rodents, the cholulo (*Ctenomys* sp.). The method of capture and preparing is identical, driving the rodents from their holes with water, beheading, and skinning and roasting the carcasses. Additionally, it was stated that the bones, softened by cooking were entirely consumed. An archeological sample of Cholulo bones excavated in the area where this description was obtained contains almost entirely skull and mandible fragments, suggesting that these animals had been processed in a manner similar to the ethnographic description. The skeletal recovery pattern contrasted with that of an even smaller rodent, which was not described as a food source. As Wedel (1970:17) has suggested, this may also explain why pocket gophers and prairie dogs at Mowry Bluff were represented archeologically almost exclusively by cranial, maxillary, and mandibular fragments (Falk, 1969:47, table 9).

These examples emphasize a point made by Vehik (1977:180–181). Because of the multiplicity of factors capable of producing a given bone distribution, "a more profitable approach would be to consider the archeological implications of the activity responsible for producing the bone fragments," than proceeding on a purely inductive basis to generate inferences. The rich ethnographic literature of the Plains will continue to

provide improved cultural models for the explication of bias in archeological samples.

Conclusions

Quantitative zooarcheological methods are concerned with attributing the characteristics of a sample to the natural and cultural factors that stand between the past behavior and the present collection of buried objects. Unfortunately, archeological bones have been modified by clusters of factors, whose effects tend to mask one another; segregating each will be an exacting analytical task (Binford and Betram, 1977:105). Nevertheless, it is possible to sort the analytic problems into three broad areas. A variety of sampling and curatorial biases affect the way the samples we study reflect the collection potentially available for recovery. The kind of collection techniques employed in excavation affect the likelihood of recovering many small species and the quantitative relationships that are estimated for species for all sizes. Each of the statistics used to estimate species frequencies makes different assumptions about the nature of the archeological situation. Considerably more experimental work will be required to sort out the effects of such attritional factors as soil chemistry, root action, and mechanical erosion. Understanding the human behavior encoded in animal bones, in the Plains as elsewhere, however, ultimately demands a more detailed ethnographic knowledge of the way cultures affect the zoological world.

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Some Observations on the Central Plains Tradition in Iowa

John A. Hotopp

ABSTRACT

A brief overview of the Central Plains tradition is presented to identify problems and models amenable to testing with data derived from the Glenwood locality. Recently obtained radiocarbon dates and other data from the Iowa excavations are presented to address problems of settlement pattern and chronology within the Central Plains tradition.

Acknowledgments.—The author wishes to thank the Iowa Department of Transportation and Federal Highway Administration who provided the funding for the series of earth lodge excavations in the Glenwood locality. Particular thanks are due to Dr. Margaret Bender and Dr. David Baerreis of the University of Wisconsin, Madison, for processing the majority of the radiocarbon samples cited in this study. Without their assistance, questions regarding many of the earlier radiocarbon dates from the Glenwood locality could not have been resolved. David Cook and Dr. and Mrs. Wedel read an earlier draft of this paper and offered many constructive comments. Responsibility for the final product, however, rests solely with the author. The assistance of Karyn McAdams in editing and typing several drafts of the manuscript is deeply appreciated.

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A Brief Overview of the Central Plains Tradition

The first excavations of earth lodges attributed to the Nebraska phase of the Central Plains tradition were conducted in southwestern Iowa near the town of Glenwood by S.V. Proudfit and Seth Dean in the late 1870s (Dean, 1883; Proudfit 1881a, 1881b, 1886a, 1886b). Some 20 years after the pioneering work by Proudfit and Dean, Robert F. Gilder, a journalist and amateur archeologist, carried out a number of excavations in eastern Nebraska which culminated in a series of descriptive articles (Gilder, 1907, 1909, 1911). Gilder later named this culture the Nebraska Culture (Gilder, 1926).

In the 1930s, largely as a result of Works Project Administration (WPA) funding, intensive field work was conducted in Iowa, Kansas, and Nebraska, focusing in part on the square lodges of the Central Plains. In Iowa, Charles R. Keyes, director of the Iowa Archaeological Survey, and Ellison Orr, his field assistant, concentrated their attention on the Glenwood lodges during the 1938 field season. Working with a WPA crew, Orr excavated 15 lodges and recorded an additional 68 in the Glenwood area (Orr, 1963, 10:4). By the close of the decade, archeologists had successfully delimited the approximate geographical boundary of the culture and had identified two variants, the Nebraska and Upper Republican phases.

The Nebraska phase, which includes Glenwood (Anderson, 1961; Brown, 1967), is centered along

the Missouri River valley in northeastern Kansas, northwestern Missouri, southwestern Iowa, and eastern Nebraska. The Upper Republican phase is centered around the Republican River in south-central Nebraska and north-central Kansas (Figure 28). Other defined units include: St. Helena, situated in northeastern Nebraska; the Loup River phase, located along the Loup River in central Nebraska; and Smoky Hill, centered in the lower Smoky Hill-Kansas River drainage.

The relationships between the Nebraska and Upper Republican variants have been considered by many researchers working with materials from the sites (Anderson, 1961:73–74; Brown, 1967:43–53; Gilmore and Bell, 1936:301–355; Hill and Cooper, 1938:350–353; Strong, 1935:266–267; Wedel, 1940:310–316; Wood, 1969:97–111). In a summary statement, Brown (1967:49) pointed out that "traditionally, sites of the Nebraska and Upper Republican phases have been regarded as exhibiting similar house types and non-ceramic artifacts, and differing ceramic traits."

The ceramic assemblages from the Nebraska phase were described by Gunnerson (1952), who divided them into two ware groups defined by rim form, decoration, and vessel shape. Additional minor ware groups and the presence of shell tempering were also noted. The typology developed by Gunnerson has been applied to both the Nebraska and Upper Republican variants. The preference for a type of pottery within each variant is measured in percentages, since the ware groups are represented in both phases. Coupled with the presence or absence of other artifact types, this preference denotes important regional variants, but does not mitigate the overwhelming

FIGURE 28.—Major archeological units (shaded areas) of the Central Plains tradition in relation to the Glenwood locality (Roper, 1976:182)

similarity in the choice of sites, exploitative patterns, and architectural styles. The important point is that these localities represent a fully developed adaptation to the forested environment along the major watercourses of the Plains. As Wedel (1940:319–320) observed:

> The basic elements were carried in virtually full blown from an older cultural environment. Just where we should look for the source of specific items is not clear, but the general direction indicated is probably the southeast and east.

A gradual south to north radiation would offer little difficulty, for, as Wedel (1934:141) points out:

> From the Arkansas river in southern Kansas to the Niobrara in northern Nebraska the stream valleys apparently formed the rungs of a ladder, so to speak, up which village movements and tribal migrations could easily have proceeded. This comparative ease of movement doubtless accounts at least in part for the widespread occurrence of certain cultures.

This concept has subsequently been explored by several researchers (Brown, 1967; Wedel, 1959; Wood, 1969). Suggested antecedents for the Central Plains tradition include the Steed-Kisker site in the Kansas City area and the Smoky Hill sites in Kansas. Current radiocarbon evidence (Roper, 1976) suggests that neither of these sites is sufficiently early to clearly qualify as an antecedent.

An examination of this postulated northward expansion constituted the thrust of the trend-surface analysis of radiocarbon dates from the Central Plains sites conducted by Roper (1976). She analyzed a series of 112 radiocarbon dates from 58 sites within the Central Plains area and successfully demonstrated the chronological feasibility of the proposed sequence of settlement. Problems with the chronological placement of Solomon River Upper Republican and Smoky Hill sites were noted. "The presence of dates earlier than predicted for the Solomon River phase could, however, place that phase more clearly contemporary with all of Smoky Hill" (Roper, 1976:187–188). In spite of the uncertain radiocarbon dates associated with the Smoky Hill/Solomon River localities, the predicted south-to-north trend was generally supported. In terms of the Glenwood locality, Roper's trend-surface analysis placed a time line through this area at about A.D. 1200 (Roper, 1976:187). The temporal range of the Nebraska phase was defined by 33 radiocarbon dates, including four from three lodges in the Glenwood locality.

Although the Glenwood lodges were the first to be described in the literature, the lack of published reports, when compared to Nebraska and Kansas, has relegated the Iowa locality to a general position of obscurity. Following Orr's 1938 excavations, unpublished until 1963, no further work was conducted at Glenwood until the 1950s. Subsequently, a number of descriptive reports have been published (e.g., Hotopp, 1978a:14–30). Current research, based on a recently expanded data base, reexamines many of the traditional problems identified in other localities of the Central Plains tradition regarding temporal span, structures, and settlement pattern, as well as ecological questions.

The present study focuses on locality-specific questions and draws upon models developed from the Glenwood locality, as well as other localities in the Central Plains, as primary sources of comparative material and hypotheses to be tested. Because the study is based upon lodges from the Glenwood area, the Willey and Phillips (1958:18) definition of a locality is accepted as the most useful unit of analysis:

> A locality is a slightly larger spatial unit [than a site] varying in size from a single site to a district of uncertain dimensions; it is generally not larger than the space that might be occupied by a single community or a local group . . . . In strictly archaeological terms, the locality is a geographical space small enough to permit the working assumption of complete cultural homogeneity at any given time.

The conceptualization of the locality as the primary unit of analysis offers several positive advantages. Due to the lack of comparable data sets throughout the range of the Central Plains tradition, large-scale synthetic studies have been relatively unsuccessful to date. The lack of reports of collections already assembled (combined with the limited digging of widely scattered sites (Wedel, 1959:558) and excavations dictated by

the requirements of particular construction projects) have produced data sets that vary both in quantity and quality. The shift of focus from tradition to locality-specific studies emphasizing the cultural and ecological setting obviates, to some extent, many of the problems involved in the broader synthetic approaches.

A second important advantage of establishing the locality as the primary unit of analysis lies in the researcher's detailed familiarity with previous work conducted in a given area, which expedites the process of reassessing and refining earlier research. Virtually every locality of the Central Plains has a long history of excavations and excavators, and uncritical acceptance of early work can provide misleading results. For example, in the 1930s, Ellison Orr identified some of the lodges in the Glenwood locality as circular rather than square in outline. Since all of the lodges visited by the early explorers in the Missouri valley were circular in form, the presence of circular lodges in Glenwood, in addition to the traditional square form, would provide strong support for a lengthy sequence of occupation. In discussing the archeological evidence for changes in lodge form, Wedel (1934:174) observed:

> In the Pawnee area of Nebraska, archaeological research has shown that this form [circular lodges] characterizes protohistoric and historic sites. Rectangular lodge remains have not been found to date in any but prehistoric villages. That the two types are fundamentally related there seems to be very little doubt . . . . Occasionally, as at Sweetwater in the South Loup drainage, the two are found together, suggesting a gradual transition from the earlier rectangular to the later historic circular type.

The circular lodges reported by Orr in Glenwood were noted by Ives (1955:2) and Anderson (1961:18) and were included as part of the inventory of Nebraska phase lodges in an early draft of Blakeslee and Caldwell's (1979) publication. An analysis of unpublished correspondence (Hotopp, 1978a:104–110, 1978b:123–128) demonstrated that the reported circular lodge form at Glenwood was due to excavation errors by Orr rather than to a valid type for the locality. Once an erroneous interpretation becomes part of the literature, however, its uncritical acceptance perpetuates problems in future analysis. Correcting and refining can best be conducted by researchers who are intimately familiar with the history of previous work in a locality.

Finally, focusing on small scale locality-specific problems promotes a better understanding of cultural processes and intralocality variability. As studies of locality-specific questions are completed, the results can be translated into hypotheses to be tested in other localities. This type of study requires a substantial commitment of time and resources by investigators. Ideally, the results of working from the particular to the general will result in a deeper understanding of the ecological and cultural adaptations of this prehistoric culture.

The Glenwood Locality

As defined by Anderson (1961:4), the Glenwood locality extends approximately 4 miles (6.4 km) into the loess bluffs and about 9 miles (14.5 km) along the Missouri River in Mills County, Iowa. Mills County is bounded on the west by the Missouri River, where the floodplain is currently about 4 miles (6.4 km) wide on the Iowa side. The floodplain terminates in a series of abruptly rising loess bluffs that are extensively dissected by erosion. In his description of the geology of Mills and Fremont counties, Udden (1902:167–168) noted the distinctive character of the bluffs contiguous with the Missouri River floodplain:

> The average thickness of the loess is estimated at about sixty feet [18 m], but in the bluffs of the Missouri River and for two miles east [3.2 km], it frequently attains a thickness of a hundred feet [30 m] and is occasionally 150 feet [45.7 km]. This marked thickening causes an ill defined ridge along the west border of the uplands in some places but it has been so greatly affected by erosion that it now exists merely as a skeleton of divides among labyrinths of gullies and ravines.

The majority of earth lodges in the Glenwood locality are situated along two southwesterly flowing drainages and their tributaries (Figure 29). The westernmost watershed is Pony Creek, which drains a 15.9-square-mile (41-km^2) area with an average floodplain of approximately 200 feet (61

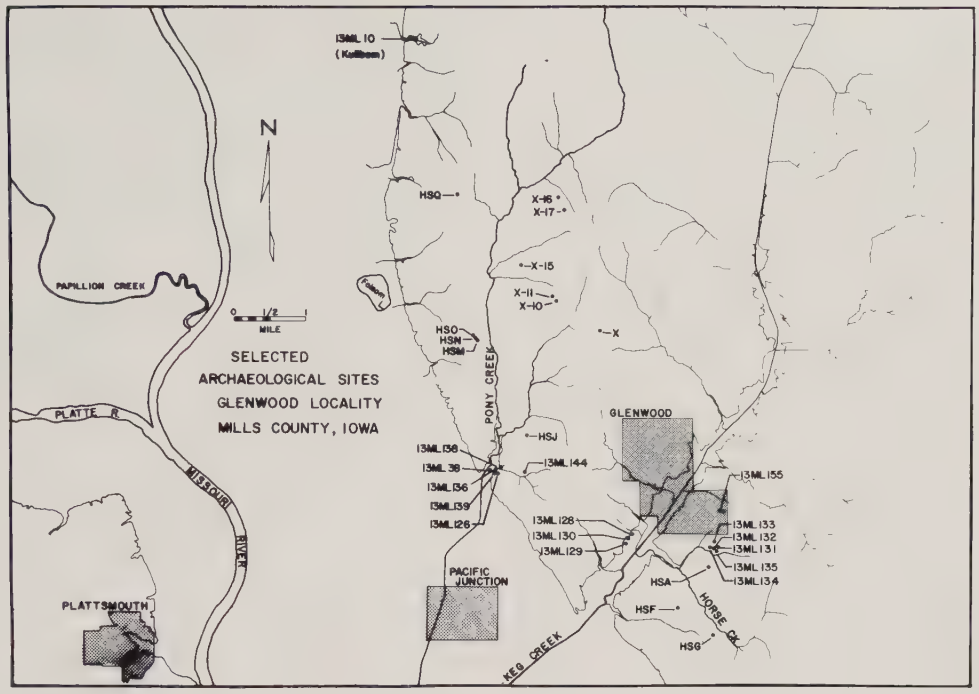

FIGURE 29.—Distribution of lodges in the Glenwood locality, Mills County, Iowa.

m) (Larimer, 1957:289). Pony Creek flows into Keg Creek on the Missouri floodplain. The Keg Creek watershed is more substantial, draining a 190-square-mile (492-km^2) area of Mills County with a floodplain averaging six-tenths of a mile (966 m) (Larimer, 1957:289). The well-developed terraces of Keg Creek appear to offer a more desirable location for lodges, but the majority of lodge sites are concentrated adjacent to Pony Creek. Lodges are also reported at the mouths of small east-west hollows, exiting directly onto the floodplain of the Missouri (Anderson, 1961:54; Proudfit, 1881b:273).

The Glenwood locality therefore conforms to the "small space" requirements of the locality as defined by Willey and Phillips, and is substantially more limited in area than the distribution of Central Plains sites in Iowa postulated by Keyes (1951). Keyes estimated that Central Plains materials extended 100 miles (161 km) along the western border of Iowa, from the Missouri state line north to mid-Monona County. "Apparently a walk of thirty minutes, or less, from any one of these houses would have brought an occupant to a full view of the six-mile-wide flood plain of the Missouri River" (Keyes, 1951:340).

Keyes' predicted distribution of lodges has not been demonstrated, however. The lack of supporting evidence for an extensive distribution of localities on the Iowa side of the Missouri River is perplexing when compared to the distribution demonstrated by Paul Cooper's 1938 fieldwork (1939:151) in eastern Nebraska:

> The cultural traits manifested by the villages in this region north of Omaha are very similar to those of sites farther to the south, and are unquestionably referable also to the Nebraska Culture. This manifestation is thus demonstrated as having a wide distribution in eastern Nebraska, extending along the entire eastern border of the state and for an uncertain distance to the west.

Keyes' estimated extent of Nebraska sites in Iowa was based on surface collections from several counties along the bluffs. As intensive surveys are conducted north of Mills County, it is possible that additional Nebraska phase lodges will be located. The potential for finding another locality on the Iowa side comparable to Glenwood, how-

ever, appears to be low in light of the extensive amateur and professional work conducted in western Iowa to date.

Currently, no earth lodge sites are known north of the Kullbom Village (13 ML10) (Figure 29). In an intensive survey of the Waubonsie watershed, located approximately 9 miles (14.5 km) south of Glenwood and in a similar environmental setting, only one cluster of three earth lodges was found (Hotopp, Rhodes, and Semken, 1975). The failure to locate more lodges in an ecologically similar environment strongly supports Anderson's (1961) restricted spatial definition of the Glenwood locality.

One explanation for the restricted distribution of lodges on the Iowa side of the Missouri River may lie in the limited timber resources available further upstream. Pierre Tabeau's narrative of Loisel's 1803–1805 expedition describes a change in the vegetation north of the Platte River (Abel, 1939:66): "The two banks of the Missouri are well wooded as far as the approaches to the River Platte . . . . Then vast and high prairies, separated from the river by low and humid plains, present to the eye a monotonous expanse." In a later passage, Tabeau reiterates the point (Abel, 1939:69) that "the Missouri, at least from the River Platte almost up to the Ricaras [probably near the Grand River in South Dakota], cannot be suitable for a large settlement and that the lack of wood alone would be more and more an insuperable obstacle." Tabeau's comments about the Indian's dependence on wood is particularly applicable to sedentary and semi-sedentary societies.

In a paper by Griffin (1976:35), timber was identified as the most critical resource and the one most exploited by a population:

> Timber was necessary for building and maintaining earthlodges, for other structures external to these dwellings, and was necessary for cooking, heating, and such manufacturing techniques as firing pottery.

The large quantity of timber required in lodge construction was demonstrated by Scullin, who reconstructed a Hidatsa lodge as a bicentennial project following plans drawn by Wilson (1934). Scullin's project involved the construction of a full-scale replica of one lodge, the entryway of a second, and roughly 100 feet (30.5 m) of palisade. When completed, approximately 1000 logs were used, ranging from 8 to 14 feet (2.4 to 4.3 m) in length and 4 to 14 inches (10 to 36 cm) in diameter (Scullin, in litt., 1977).

Timber availability and distribution should closely correlate with the observed settlement pattern in a locality. The majority of the lodges in the Glenwood area are located adjacent to Pony Creek. A second concentration of lodges is located in the vicinity of Horse Creek, a tributary to Keg Creek. Both the Pony and Horse Creek watersheds consist of small, highly dissected valleys. The locations of numerous lodges in these watersheds indicates that they were well timbered at the time of occupation. Orr's (1963, 10:4) comments are pertinent.

> According to the evidence of the oldest settlers now living, all the rough areas of the Missouri, with the exception of the sharp crests of the divides near, and steep bluff sides facing, the river, was well, sometimes heavily, timbered. East of the river the rough country merged rapidly into rolling upland, mostly prairie . . . .

One WPA project in the 1930s was the compilation of the original land survey notes, dating from the establishment of township and section lines throughout the Iowa territory, and reconstruction of the forest cover in Iowa as described in these notes. The resulting forest cover map for Mills County (Figure 30) clearly illustrates a belt of timber transecting Pony and Keg Creek watersheds. This timbered area closely agrees with the known distribution of lodges (Figure 29). At the time of the Central Plains occupation, approximately A.D. 1050-1250, the forest cover probably was slightly denser, especially along the ridge tops on both sides of Pony Creek northward to the forks of the creek. This interpretation is based upon the number of lodges bordering the stream, both on the footslope-terrace contact and on the adjacent ridge spurs. The only lodge-remains north of the fork of Pony Creek are situated along the tributary nearest the Missouri River valley. The bluffline adjacent to the Missouri floodplain

FIGURE 30.—Forest cover in the Glenwood locality (black areas represent forest identified during 1850s land surveys; dotted line represents the approximate bluff line; dashed line defines Mills County, Iowa; source: WPA, c. 1930).

was probably largely prairie, as observed by Orr (1963) and Tabeau (Abel, 1939), with pockets of timber marking the hollows eastward into the bluffs. Based on the WPA forest cover map, the wide, gentle terraces of the Keg Creek watershed upstream from Glenwood were probably prairie covered. Because of the lack of timber and the open, unprotected character, the gentle slopes were apparently avoided as lodge sites.

In his discussion of the Upper Republican villages, based on extensive excavations at Medicine Creek, Wedel (1959:558) notes a similar situation.

> There appears to be a marked preference for residence on small streams, perhaps because suitable building timber may have been more abundant here than on the main rivers, as seems to have been the case in the 19th century.

Central Plains Settlement Patterns

Studies of the Nebraska phase settlement patterns and lodge variability have been seriously compromised by two continuing problems: incomplete excavations of sites and a serious backlog of unreported fieldwork. In regard to the first problem, the majority of the published comparative studies primarily represent minimal excavations from widely scattered sites. Sampling of one or two lodges from a site is a common survey method and may not be representative of the range of variability that may be present in a particular locality. The necessarily incomplete nature of partial site excavations may result in distortions of the settlement pattern.

For example, in a review of settlement patterns in the Central Plains, Gradwohl (1969:135) suggested that sampling localities has resulted in a built-in bias toward a dispersed community pattern. He argued that conceptualizing site units by individual house depressions, and excavating only these features without testing the areas lacking surface indications, has resulted in an apparent settlement pattern of either isolated lodges, linear strings, or small clusters of two to four lodges. Gradwohl stated that more nucleated villages are found in the Central Plains tradition, based upon excavations conducted at the Theodore Davis site in the Weeping Water locality of Nebraska. At this site, six lodge depressions were observed on the surface. Four were excavated, yielding typical square earth lodges. Rather than excavate the remaining two lodge depressions, a series of tests were conducted in the areas between the lodge depressions, resulting in the location of two additional lodges with no surface indication. Gradwohl assumed that these "buried" lodges were contemporaneous with the six lodges noted from the surface depressions and that the site actually was a small nucleated village. However, the floor area of the lodges found in the depressions (420 to 1156 square feet or 39 to 107 m^2) was two to five times the floor area of the buried lodges (196 to 213 square feet or 18 to 20 m^2). The six lodge depressions could alternately be interpreted as representing the terminal occupation of the site, and the buried lodges might date from an earlier occupation. Regardless of the correctness of either interpretation, the presence of additional lodges with no surface indication clearly illustrates the magnitude of the problem for settlement pattern studies.

Closely related to this problem is the continued obliteration of surface indications of lodges. None of the lodges located by Brown (1967) in the Pony Creek watershed were visible on the surface. Many lodges located at the footslope bottomland contact were found only because erosion associ-

ated with plowing finally exposed the hearth. No depressions were located by Anderson for the three lodges that he excavated in 1969–1970, or by the author for the fourteen complete and partial houses excavated within the Highway 34 corridor during 1971–1973. The destruction of surficial evidence of lodges is frustrating for two reasons: (1) the requirements of settlement pattern studies are totally dependent on an accurate knowledge of lodge placement and distribution, and (2) only large-scale construction projects permit the extensive testing required to locate lodges and determine variations in settlement distribution.

The second problem involves the substantial body of excavated material from Central Plains sites that is either not analyzed or only reported in summary fashion. Information from these collections is urgently needed to fill the gaps in our understanding of the culture history of the Central Plains tradition. Many of the undescribed collections represent substantial excavations from particular localities. As Wedel (1959:558) observed:

> Much more comprehensive in scope were the still unreported operations of the Nebraska State Historical Society and Works Progress Administration in 1939 at Site 25HW6 on Davis Creek, in Howard County, Nebr., where 21 house sites were opened; and the 1948 investigations of the River Basin Surveys (Kivett, 1949) and of the Nebraska Historical Society (Wedel, 1953b [sic], pp. 12–18, 41–42) at Medicine Creek reservoir area.

Almost 20 years later, in an obituary for his friend and co-worker, George Metcalf, Wedel (1978:5) stated that

> he [Metcalf] was engaged before and after his retirement in the analysis and writing up of great masses of unpublished WPA materials from Davis Creek and was optimistically planning research on the extensive River Basin Surveys collections from Medicine Creek. These two Nebraska projects would have provided many times more systematically gathered information than is currently available on the Upper Republican or, indeed, on any taxonomically sanctified Central Plains Tradition complex west of the Missouri.

Central Plains collections, such as these, are located in every state in the Plains area. McKusick (1964:175) points out that the collections from Orr's 1938 excavations in Iowa were virtually ignored until Anderson's 1961 study. The continuing problem of backlogged collections contributes to the incomplete nature of the data base, upon which settlement pattern studies are dependent.

The generally accepted view of the settlement patterns for the Central Plains tradition was summarized by Wedel (1961:95):

> Villages show little or no evidence of planning. In the Nebraska culture they consisted of house units strung irregularly along the tops of ridges and bluffs; others may have been scattered on lower terraces, where their arrangement is now obscured by slope wash or other factors. Upper Republican villages, like many of those in the Lower Kansas River drainage, were generally on creek terraces, where the topography permitted more latitude in the disposition of the lodges. Typically, they consisted of single houses, randomly scattered at intervals of a few yards to several hundred feet, or of clusters of two to four lodges, similarly separated from other small clusters or single units.

Wedel's summary view clearly recognizes that the topographic setting provides an important constraint on the placement of lodges within the Nebraska phase. The rugged, dissected character of the loess bluffs adjacent to the Missouri trench and their relationships to lodge placement has been considered by several researchers working in this area.

Summarizing his excavations in eastern Nebraska, an area very similar to Glenwood, Sterns (1915:191–203) observed the following:

> The depressions or "circles" are usually located on the steep loess ridges along the river courses. One important group is located on the second bottom of the Missouri . . . . The sites on the ridges are not always on the highest part, but often on a point, away from which the hill falls off rapidly in three directions. Wherever possible, the "circles" occur in little knolls from which water will drain in every direction.
>
> These sites are usually near the flood plain of the Missouri, being often on the first or second bluffs of that river. The great majority of them are included in a strip a mile wide along the bottom of the river.
>
> . . . Altho the "circles" are the remains of ancient lodge sites, they are not* arranged in village groups. Some are isolated as much as a half a mile from any other site. When they are near each other, they are often merely spread out in

* The word "not" is handwritten in the dissertation.

a long line along the ridge. Even when they are located on the broad flat second bottom of the Missouri, the long line is retained.

The theme of lodge placement and topography was reiterated by Cooper and Bell (1936:20–21) in their description of the Weisman site.

> Of the thirty-one house depressions located, all but two are scattered along a single ridge for a distance of approximately 1,700 feet [518 m], in three fairly distinct groups . . . . While there seems to be some tendency toward a linear arrangment of the houses, this is probably largely dictated by the characteristics of the terrain upon which they are constructed.

This brief summary of comments by archeologists investigating various localities of the Central Plains tradition suggests that the topography of the general area selected for settlement strongly influenced the placement of the lodges. With these observations from other localities of the Central Plains as a baseline for comparison, a brief review of the observations of the investigators in the Glenwood locality follows.

Settlement Variations in Glenwood

The surveys of both Proudfit (1881b) and Orr (1963) located the majority of the lodge depressions along the ridge tops overlooking the Pony Creek valley. Only two lodges were located north of Glenwood on Keg Creek by Proudfit (1881b) and Dean (1883), and the lodges located east of Keg Creek were confined mainly to the Horse Creek area. Based on his surveys and excavations, Proudfit (1881b:273) concluded: "A single lodge is the exception—a group the rule." Substantial development of the Mills County road system, residential and commercial construction, and continued farming had undoubtedly obliterated many of the house depressions in the 58-year interval between Proudfit's and Orr's surveys. As early as 1880, Dean (1883) noted that the depressions marking the Allis Village were becoming difficult to see because of filling associated with farming. To partially offset this problem, Orr searched out older residents of the area who provided locational information for a number of lodges that were no longer visible on the surface. After his 1938 field season, Orr (1963, 10:5) challenged the settlement pattern reported by Proudfit.

> Our survey finds the opposite of this is true. Forty-seven of the sixty-eight located by us, separated by distances of over half a mile, must certainly be considered singles.
>
> Doubtless a number of sites have quite certainly been obliterated by cultivation or have left no traces of their location, but just as certainly by no means enough to make every single location by us one of a group the others of which have disappeared.

The pattern of lodge distribution was summarized by Orr (1963, 10:4).

> The earth lodge[s] . . . are found chiefly on the higher and wider parts of the crests of the divides, at the general upland level, and with two exceptions [probably the Allis village and house site 36], somewhat back—one-fourth mile—from the edge of the bluff line facing the river bottoms.
>
> Of the sixty-eight sites . . . fifty-five are so situated, seven are on small level benches or terraces on sloping points of spurs of the upland, and the remaining six at or about where the slope of the bluff and the bottom land meets.
>
> At no place are they in close enough proximity or in numbers sufficient, to be considered a village.

An opportunity to test for lodges and associated external features in a transect through both the Pony and Keg Creek watersheds was provided by the extensive right-of-way requirements for the Highway 34 relocation project. All 17 lodges excavated within the right-of-way were located with power equipment. Extensive testing between the lodges and monitoring during contruction failed to locate additional "buried" lodges, and only one external cache was found in association with a lodge (Hotopp, 1978a:76–83). Based on the work conducted in the Glenwood locality by Anderson (1961), Brown (1967), and Hotopp (1978a), the settlement patterns identified by both Proudfit (1881b) (consisting of groups of lodges) and Orr (1963) (identified by isolated lodges) have been supported. By far, the most common settlement patterns is that of houses located in a linear arrangement along a ridge spur or at the footslope contact, a pattern indistinguishable from that reported by Cooper and Bell (1936), Sterns (1915), and Wedel (1961).

The preference for the more rugged topography of the Pony and Horse Creek areas, in addition to acting as a constraint on lodge placement, appears to have also determined the size and orientation of lodges. An assessment of lodge size and landscape position (Table 3) clearly reveals that where large lodges of over 700 square feet (65 m^2) in floor area are found, the topographic setting is favorable, i.e., large, well-developed, gently sloping terraces, wide ridge tops, or gently

TABLE 3.—Lodge dimensions and landscape positions of sites at the Glenwood locality

Watershed and site number	*Lodge dimensions*		*Landscape position*	*Source*
	(ft)	(sq ft)		
PONY CREEK				
13ML119	19 × 19	361	Footslope	Anderson, 1973
13ML124	24.5 × 25	613	Terrace	Anderson, 1973
13ML126	24 × 25	600	Backslope	Hotopp, 1978a
13ML136	24 × 25	600	Footslope	Hotopp, 1978a
13ML139	21.5 × 22.5	484	Footslope	Hotopp, 1978a
13ML145	17.5 × 18.5	324	Backslope	Hotopp, 1978a
13ML205[a]	25 × 20	500	Footslope	Brown, 1967
13ML206[a]	20 × 20	400	Footslope	Brown, 1967
13ML216[a]	17.5 × 17.5	306	Footslope	Brown, 1967
13ML218[a]	26 × 25	650	Terrace	Brown, 1967
13ML219(1)	30 × 30	900	Backslope	Brown, 1967
13ML219(2)	36 × 36	1296	Backslope	Brown, 1967
13ML222[a]	25 × 24	600	Terrace	Brown, 1967
HSJ	18 × 20	360	Backslope	Orr, 1963
HSM	24 × 24	576	Backslope	Orr, 1963
HSN	27 × 28	756	Backslope	Orr, 1963
HSO	20 × 25	500	Backslope	Orr, 1963
HSX[b]	34 × 34	1156	Summit	Orr, 1963
HSX10	31 × 31	961	Summit	Orr, 1963
HSX11	31 × 31	961	Summit	Orr, 1963
HSX15	36 × 36	1296	Summit	Orr, 1963
HSX16	24 × 24	576	Backslope	Orr, 1963
KULLBOM				
13ML10(1)	24 × 21	504	Footslope	Anderson, 1961
13ML10(2)	25 × 28	700	Footslope	Anderson, 1961
13ML10(4)	25 × 25	625	Footslope	Anderson, 1961
KEG CREEK				
13ML121	19 × 19	361	Footslope	Anderson, 1973
13ML128	32 × 33	1056	Terrace	Hotopp, 1978a
13ML129	30 × 32	960	Terrace	Hotopp, 1978a
13ML130	43 × 43	1849	Terrace	Hotopp, 1978a
HORSE CREEK				
13ML134	24 × 24	576	Footslope	Hotopp, 1978a
13ML135	21.5 × 23	495	Footslope	Hotopp, 1978a
13ML155	23 × 22	506	Backslope	Hotopp, 1978a

[a] Partial house, length estimated.

[b] On divide between Pony and Keg creeks.

sloping ridge spurs. The smaller, more common lodges of less than 700 square feet (65 m^2) are almost always constrained by their topographic setting. These lodges are most commonly located on steeper slopes or narrow ridge spurs, which would have required massive excavations for a larger lodge. The houses were oriented with the entryway opening downslope and the rear walls parallel with the hill slope. Only one lodge (HS J) has been reported on a north-facing bluff slope (Orr, 1963, 10:89–90) and the entryway to this lodge was not located.

Two clusters of lodges are known from Glenwood. In an 1883 report, Dean illustrated the Allis Village, which consisted of five lodge depressions located on a bluff slope overlooking the Kullbom valley. A similar cluster of five lodges was located by the author on a ridge slope overlooking Horse Creek (Hotopp, 1978a:66, 84).

The preference for east, west, and south facing slopes and the practice of locating entryways on the downslope side of the lodges in the Glenwood locality supports the conclusions reached by Sterns (1915:201) for the Nebraska lodges he excavated in a similar environmental setting:

> Three of them were a few degrees south of east in their direction while a fourth was southwest. Six in which the entrance passage could be located without excavation had them running approximately south. The direction apparently was determined entirely by the slope of the hill . . . .

In their assessment of the Nebraska phase, Blakeslee and Caldwell (1979:44) note:

> Entryways are oriented to all points of the compass, but there is a very strong tendency to southerly directions . . . . The southerly orientation of the entryways can probably be attributed to the strong northerly winter winds common in the region.

Within the Glenwood locality, lodges under 700 square feet (65 m^2) in floor area are found most frequently in close association with one another. Houses with larger floor areas are commonly isolated from one another by distances ranging from several hundred feet to one-half mile. The clustering of smaller lodges and the isolation of larger lodges in the Glenwood locality is virtually indistinguishable from that reported for the Nebraska phase by Blakeslee and Caldwell (1979:109):

> Both single lodges and villages occur throughout the lifetime of the phase . . . . [T]here seems to be a dual settlement pattern for the Nebraska Phase although the functional differences between the two types of site is [sic.] not yet understood. The fact that the single lodges are considerably larger than those in the villages suggests that the composition of households in the two kinds of settlement were [sic.] different.

Central Plains Tradition Settlement Models

The bifurcated settlement pattern observed within many of the localities on the Central Plains has been the subject of a number of theoretical reconstructions. One popular model, developed by Krause (1969, 1970), incorporates a sequential settlement configuration spanning approximately 600 years from the ninth to the fifteenth centuries. Krause developed the model from his research in the Glen Elder locality on the Solomon River in north-central Kansas. Briefly, Krause argued that the larger earth lodges (between 500 and 1050 square feet in floor area, or 46.4 and 97.5 m^2) were found in hamlets situated on prominent terraces of the Solomon River, and represented the initial settlement. After about 400 years, these hamlets were abandoned, and presumably the occupants shifted to smaller, lightly built, isolated lodges (between 144 and 225 square feet in floor area, or 13.4 and 20.9 m^2), located on the timbered banks of a feeder creek. The shift in settlement was viewed as a response to a change in climate occurring around A.D. 1250, which affected cultivation, hunting, and collecting. According to Baerreis and Bryson (1965), the climatic shift to cooler, drier conditions would have reduced agricultural productivity and encouraged population dispersal. Krause (1970:108) supported this sequence with a series of seven radiocarbon dates from the hamlets and an observed trend in the ceramics.

This model has been widely cited by archeologists working with Central Plains sites. For example, Johnson (1973) employed this model as an explanatory device in interpreting a bimodal

distribution that he observed when he plotted lodge floor areas for 54 Central Plains houses. The distribution revealed one group of lodges clustering between 100 and 700 square feet in floor area (9.3 and 65 m^2) with another group ranging between 900 and 1700 square feet (84 and 158 m^2). Johnson interpreted this bimodal pattern as reflecting the onset of drought conditions beginning around A.D. 1200, which resulted in a shift from large lodges in hamlets to small isolated lodges as proposed by Krause. If Krause and Johnson are correct in their interpretations, then, larger lodges (over 900 square feet or 84 m^2) will date earlier than the smaller lodges (under 700 square feet or 65 m^2).

The Krause model was applied to the Glenwood locality by Anderson and Zimmerman (1976), and was later incorporated into a computer-simulated settlement study by Zimmerman (1977). Anderson and Zimmerman approached the question of settlement pattern variability in the Glenwood locality by developing a cultural-ecological model to explain the diversity in lodge size and placement. Essentially, this model was based on a hypothesized 400-year occupation of the locality, occurring between A.D. 900 and 1300. Changes in settlement pattern were viewed as responses to a shift to drier conditions around A.D. 1150 to 1250, which would have resulted in the expansion of the prairies and the reduction of the woodlands (Anderson and Zimmerman, 1976: 152). A number of adjustments to this climatic shift by the inhabitants was suggested. Of particular interest to this study are the hypothesized climatically induced changes in subsistence systems, resulting in a modification of artifact assemblages from the more recent lodges, and a relocation of the population from lodges on the ridgetops to houses located at the hillslope-bottomland contact. Relocation from the ridgetops to the valley floors was viewed as a necessary response to generally drier conditions, because diminished rainfall would render ridgeline horticulture impracticable. Additional hypotheses were proposed, ranging from siting and orientation of the lodges to proposed kinship organization (Anderson and Zimmerman, 1976:153):

> We regard the known house distribution as the reflection of one dispersed community layout. This community may have occupied the locality for several hundred years. What appears to be house clusters may be no more than the remains of serially constructed dwellings of one lineage, occupying the same topographic location through time. Each house might be home for an extended family unit, cooperating and interacting with other families as custom and need dictated.

The Anderson and Zimmerman model clearly is concerned with the same questions examined by Krause (1969, 1970), but the conclusions regarding changes in settlement patterns through time are directly opposite. Anderson and Zimmerman view the chronological development of the Glenwood locality as represented by early settlement in small isolated households located on the ridgetops; only later did the inhabitants aggregate into hamlets in the bottomlands as a response to a deteriorating climate. In establishing the variables for his 1977 study, Zimmerman (1977:75) defined the usual size of the dispersed isolated houses on the ridgetops as "under 400 square feet [37 m^2] in area, whereas the clustered lodges range from 400 to a reported 1600 square feet [148.6 m^2]."

All three of the models postulate a long-term developmental sequence of occupation in the localities with changes in settlement pattern responding to the onset of the Pacific (A.D. 1250–1450), when diminishing summer rainfall rendered corn farming difficult if not impossible in the Central Plains. In response to these conditions, either the large farming hamlets disbanded (Krause, 1970:112), or the small lodges on ridgelines were abandoned and people clustered into large hamlets (Anderson and Zimmerman, 1976:151; Zimmerman, 1977:74).

The data from the Glen Elder locality cited by Krause (1969, 1970) in support of his model were systematically studied by Lippincott (1976). Based on the radiocarbon data supplied by Lippincott (1976:115a), the radiocarbon dates cited but not presented by Krause (1969:89; 1970:108) are not supportive of the postulated developmental sequence: the range for farming hamlets is from A.D. 1090±80 to 1340±100, while the range for small isolated households and seasonal

hunting and fishing camps is from A.D. 810±100 to 1495±90. Further, the lodge floor area of the six Glen Elder houses excavated by Krause (Lippincott, 1976:118a) averages 732 square feet (68 m^2) and ranges from 482 to 909 square feet (45 to 84 m^2), slightly more than twice the maximum size cited by Krause for isolated households (i.e., 144 to 225 square feet, or 13 to 21 m^2) in floor area. The increased size brings the lodges more in line with the range of Central Plains lodges known from other areas, and corresponds to Wedel's (1970:18) comment regarding the exceptionally small lodges described by Krause in his model: "I have the impression that houses as small as those of the second Solomon River settlement type are not characteristic of the Nebraska Upper Republican communities as these are now known where large scale excavations have been carried out." As a result of his research, Lippincott (1978:87) concluded:

> A realistic interpretation of both radiocarbon and seriation information would be to split the occupation of the Solomon River locality into a period of relatively intense occupation from A.D. 800–850 through A.D. 1200–1250 and a period of drastic reduction of occupation density after 1200–1250.

Systematic analysis of the Glen Elder materials by Lippincott clearly demonstrates that Krause's model was only loosely tied to the available data and that alternative interpretations are equally viable. Nevertheless, several of the hypotheses proposed by Krause and incorporated into subsequent models provide the basis for additional research. All of the examined models assume continuous occupation of a locality for a substantial time period, usually 400 years (A.D. 900–1300). This span of occupation is established from a few radiocarbon dates. A shift in occupation from large lodges in hamlets to small isolated lodges or some variation is also a common theme of the models. Generally, all of the proposed models have been handicapped by the paucity of available radiocarbon dates from the localities. For example, when Roper (1976) prepared her radiocarbon study for the Central Plains, only 33 dates were available for the entire Nebraska phase.

Forty-one radiocarbon dates have been obtained for the Glenwood locality, and these dates provide the basis for several observations regarding radiocarbon samples, time, span of occupation, and the relationships of large and small lodges in Glenwood.

The Glenwood Temporal Sequence

In developing their model of the Glenwood settlement sequence, Anderson and Zimmerman (1976) estimated a span of occupation based upon 10 radiocarbon dates ranging from A.D. 430±100 to 1280±70. Six of the samples were paired and represented three lodges. Gross intralodge differences between radiocarbon dates seriously compromised the reliability of these paired samples as accurate temporal indicators. For example, two dates from 13ML119, a Pony Creek lodge, were both early (A.D. 885±105 and 920±130) and consistent. But the dates from 13ML121, a Keg Creek house, were A.D. 870±95 and 1260±100, a difference of 390 years, and two samples from 13ML124 were dated A.D. 430±100 and 1215±95. The inability to obtain reasonable sample agreement within a lodge seriously compromised any estimate of span of occupation, and established a clear need for carefully controlled, multiple-lodge samples from the locality.

As a direct result of the Highway-34 excavations and the continuing research of the author, 31 additional radiocarbon dates were obtained from the Glenwood locality. An initial requirement of three radiocarbon dates per lodge was established. Samples were selected from wall posts, and the charcoal was identified to genus or species by Dr. Dwight Bensend, Iowa State University. Every attempt was made to control possible sources of error, from the field collecting stage through laboratory processing. The first set of three dates from lodge 13ML130 was processed commercially and sample agreement was encouraging. The remainder of the samples was processed at the Center for Climatic Research, University of Wisconsin, Madison.

The initial selection of charcoal from the bottom of lodge wall posts served three purposes. First, the relatively small diameter of the post

TABLE 4.—Radiocarbon dates for sites at the Glenwood locality

Watershed and site number	*Laboratory number*	*B.P. date*	*A.D. standard conversion*	*Wood identification*[1]	*Comment*
PONY CREEK					
13ML119	GX 2003	1065±105	885	None	
	GX 2004	1030±130	920	None	
13ML124	GX 2005	735±95	1215	*Tilia americana* and *Quercus alba*	
	GX 2006	1520±100	430	Ring porous hardwood (not identified)	Rejected
13ML126	Wis. 632	730±55	1220	*Populus deltoides*	
	Wis. 633	985±45	965	*Quercus rubra*	
	Wis. 716	840±60	1110	*Ulmus rubra* or *Celtis occidentalis*	
13ML136	Wis. 697	875±60	1075	*Ulmus rubra*	
	Wis. 698	775±55	1175	*Ulmus americana*	
	Wis. 699	865±55	1085	*Quercus alba*	HCL pretreatment only
	Wis. 702	690±50	1260	*Quercus alba*	
13ML138	Wis. 792	1010±55	940	Charred corn	
13ML139	Wis. 691	440±45	1510	*Ulmus rubra* or *Celtis occidentalis*	Rejected
	Wis. 700	835±55	1115	*Ulmus rubra* or *Celtis occidentalis*	
	Wis. 701	850±55	1100	*Ulmus rubra* or *Celtis occidentalis*	
13ML145	Wis. 894	700±55	1250	*Populus deltoides*	
	Wis. 896	770±60	1180	*Fraxinus americana*	
	Wis. 900	775±55	1195	*Ulmus americana*	
13ML216	SI 693	750±90	1200	None	
13ML219 (1)	SI 210	670±70	1280	None	
13ML219 (2)	SI 211	1050±90	900	None	Rejected
13ML222	SI 212	740±80	1210	None	
KEG CREEK					
13ML121	GX 2007	1080±95	870	*Carya* sp.	
	GX 2008	690±100	1260	*Ulmus rubra* or *Celtis occidentalis*	
13ML128	Wis. 560	820±50	1130	*Ulmus rubra* or *Celtis occidentalis*	
	Wis. 565	790±55	1160	*Ulmus rubra* or *Celtis occidentalis*	
	Wis. 566	855±55	1095	*Ulmus rubra* or *Celtis occidentalis*	
13ML129	Wis. 559	820±55	1130	*Ulmus rubra* or *Celtis occidentalis*	
	Wis. 562	765±55	1185	*Ulmus rubra* or *Celtis occidentalis*	
	Wis. 564	825±60	1125	*Ulmus americana*	
13ML130	I 6295	712±90	1143	*Ulmus rubra* or *Celtis occidentalis*	
	I 6296	945±100	1005	*Ulmus rubra* or *Celtis occidentalis*	
	I 6297	765±110	1185	*Ulmus rubra* or *Celtis occidentalis*	
HORSE CREEK					
13ML132	Wis. 708	310±60	1640	*Ulmus rubra* or *Celtis occidentalis*	Rejected
	Wis. 709	860±55	1090	*Ulmus rubra* or *Celtis occidentalis*	
	Wis. 710	360±55	1590	*Ulmus rubra* or *Celtis occidentalis*	Rejected
13ML135	Wis. 713	860±60	1090	*Ulmus rubra* or *Celtis occidentalis*	
	Wis. 717	975±60	975	*Quercus alba*	
	Wis. 719	910±60	1040	*Ulmus rubra* or *Celtis occidentalis*	
13ML155	Wis. 877	690±50	1260	*Ostyra* sp.	
	Wis. 878	705±50	1245	*Juglans nigra*	

[1] Wood identifications by Dwight Bensend and Barbara Schulte, Iowa State University.

should reduce the number of radiocarbon years represented in the sample. Second, the increased depth of the post bottom from the surface should limit sources of contamination in the sample. Finally, the selection of structural members should guarantee contemporaneity with the lodge. The possibility of reuse of posts was considered, but since the majority of the lodges had burned, reuse was considered a lesser factor.

All samples initially submitted were collected from elm/hackberry (*Ulmus* sp. or *Celtis occidentalis*) posts 20 centimeters or less in diameter. Elm/hackberry was selected because they are fast-growing trees and were well represented in the lodges. As confidence in the procedure was gained, samples from other hardwoods were dated.

The series of radiocarbon dates for the Glenwood locality is presented in Table 4. Eight radiocarbon dates were earlier than A.D. 1000, and three were later than A.D. 1300. Three of the pre-A.D. 1000 dates are from lodges that also yielded dates in the 1200s. A single date of A.D. 900 from 13ML219 (house 2) was rejected by Brown (1967:48). The dates from 13ML119 represent the only case of two early dates from a single lodge in the locality. However, a lodge with two dates of A.D. 1590±55 and 1640±60 (13ML132) also yielded a date of A.D. 1090±55. Two dates of A.D. 1100±55 and 1115±55 were obtained from house 13ML139 along with one late date of 1510±45.

In comparing the distribution of all samples from the Glenwood locality with the remainder of the Nebraska phase assembled by Roper (1976), the number of early dates (pre-A.D. 1000) from Glenwood is substantially higher. The number of early samples from the Nebraska phase, excluding Glenwood, represents approximately 9% of the sample, but in Glenwood, 25% of the sample is earlier than A.D. 1000. Because the majority of the early dates from Glenwood are compromised by their association with later dates from the same lodge, sample contamination rather than an extended sequence of occupation appears to be the cause. The procedure of dating small diameter wall posts of rapidly growing tree species has probably been the major factor in the tighter clustering of radiocarbon dates from the lodges. The continuing problem of wild dates, however, points up the difficulty of reliance upon single dates in the determination of either the time or span of occupation for a locality.

An inspection of the tree species represented in the rejected samples, where known, revealed that four of the samples were composed of red elm or hackberry. One rejected date was based on corn, and the remaining four were not identified. Conversely, 14 elm or hackberry samples yielded acceptable dates. It is interesting to note that two early dates (13ML126, A.D. 965, and 13ML135, A.D. 975) were from oak samples. In both instances, the samples were collected without establishing the position of the sample within the post and roof timber. One oak sample (13ML136, A.D. 1175) resulted in an expected date, but in this case only the outer rings were represented in the charred post stump. As a general caveat, slow-growing trees, such as oaks, should be dated with caution, especially if the location of the sample within the post cannot be determined at the time of collection.

For the Glenwood locality, approximately 76% of the radiocarbon dates are within the 300-year time period from A.D. 1000 to A.D. 1300. Averaging the dates for each lodge (Long and Rippeteau, 1974) serves to further compress the temporal range of the community (Hotopp, 1978a:206–260). The incursion of the Nebraska phase peoples into southwest Iowa appears to represent a relatively short-lived phenomenon occurring between A.D. 1050 and A.D. 1250. The compressed span of occupation does not preclude local developmental sequences within the locality over several generations. No temporal differences were observed between the large and small lodges in the locality.

Glenwood Lodge Size, Placement, and Population Estimates

Lodges within the Glenwood locality tend to be small, with approximately 63% of the sample

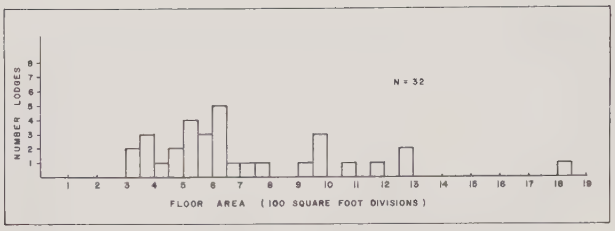

FIGURE 31.—Glenwood locality lodge floor areas.

under 650 square feet (60 m^2) in floor area (Figure 31). The lodges over 900 square feet (84 m^2) are generally located on ridge summits and gentle backslopes; however, three of the larger lodges were situated on a large, relatively flat terrace on Keg Creek (Table 3, Figure 29). The upland placement of the majority of the lodges over 900 square feet (84 m^2) is not supportive of Zimmerman's (1977) model.

Comparison of the Glenwood lodge floor areas with a general sample from the Central Plains compiled by Johnson (1973) and Lippincott (1978) indicates a partiality toward smaller lodges (Figure 32): 54% of the sample is less than 700 square feet (65 m^2) and 74% is less than 1000 square feet (93 m^2) in floor area. Wedel (1979), who subsequently expanded the lodge floor sample to 122 lodges, found that 52% of the lodges were under 620 square feet (58 m^2) in floor area.

The relationship of lodge floor area to house population formulated by Naroll (1962) and by Cook and Heiser (1968) was restudied by Wedel (1979). Wedel argued that the application of

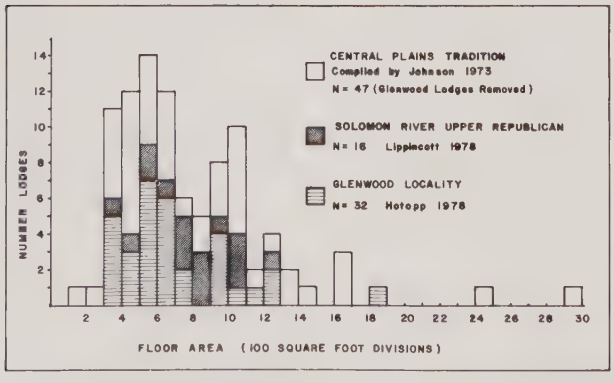

FIGURE 32.—Comparison of Glenwood locality and various Central Plains locality lodge floor areas.

formulas derived from ethnographic and historic data for widespread cultures is not in harmony with the information available for historic Plains tribes. From ethnographic accounts, Wedel demonstrated that neither Naroll's nor Cook and Heiser's population-estimating formulas yield the number of inhabitants of lodges recorded for the Pawnee and Wichita. As a result of his analysis, Wedel derived a figure of 5 square meters per person as more accurately reflecting known population density for Pawnee earth lodges. Application of this formula to the Glenwood lodges suggests either extended or multifamily occupation of the smaller (under 600 square feet, or 56 m^2) houses, rather than a nuclear family situation proposed by Naroll's figures. Wedel's Plains-specific formula also indicates a greater population density with an increased exploitation of the ecosystem for Glenwood, which is consistent with a model of short-term occupation of the locality.

Conclusions and Implications for Further Research

The present study focused on data gathered from the Glenwood locality and incorporated recent information gathered from the Highway 34 relocation project. The excavations transected both Pony and Keg creeks and provided an intensive sampling of the Keg Creek watershed for the first time. Substantial right-of-way requirements allowed extensive testing around the lodge perimeters and between lodges to define the settlement pattern for the community.

Distribution of the Central Plains tradition in Iowa was shown to be limited to the Glenwood area, and the general sparsity of timber northward was suggested as a possible limiting factor in the location of additional Central Plains localities. Availability of timber was apparently an important controlling factor in the selection of lodge sites within the locality. The majority of the lodges were located within the smaller watersheds with rugged topography, a factor which influenced lodge placement, orientation, and size.

The development of locality-specific questions

has drawn upon models developed for Glenwood, as well as other localities in the Central Plains, for comparative materials and hypotheses to be tested. Difficulties inherent in models concerned with explaining variations in lodge sizes and settlement patterns in response to a change in climate within the Central Plains were explored. In addition, problems with the relationships of the models to the data from which they were derived were identified. The theoretical underpinnings of these models lie in a long sequence of occupation of a locality, with a shift in settlement pattern occurring in response to a climatic shift and archeologically reflected in differential lodge size and degree of aggregation. The bimodal character of Central Plains lodge floor areas first identified by Johnson (1973) for 54 Central Plains lodges has continued to be supported by a substantial increase in the sample size (Wedel, 1979).

The model proposed for the Glenwood locality of initial settlement on the ridge tops and later movement to the bottom lands in response to a deteriorating climate was tested with the available radiocarbon evidence. This model assumes for Glenwood a lengthy span of occupation, beginning with small isolated lodges on the ridge tops and later aggregations of hamlets composed of larger lodges in the creek valleys. The reassessment of available radiocarbon dates and archeological evidence contradicts this model on several grounds. No differences can be seen in the radiocarbon dates from the large lodges (13ML128, 13ML129, and 13ML130) and a small lodge located on the upland (13ML155). Moreover, the lodges associated with hamlets have been shown to be smaller than the isolated lodges.

The radiocarbon evidence from Glenwood aptly illustrates the problems of relying on a single date from a lodge to establish either the time or duration of the occupation of a locality. The problem of outliers in the samples has not been completely eliminated in the latest series of dates, but the application of a carefully-defined sampling technique has reduced the number of clearly erroneous dates by 50%. The source of error appears to be sample contamination, and while the exact sources of this contamination have not been clearly defined, the refinements in methodology from collecting to statistical manipulation constitute a positive step forward.

Topography appears to constitute a significant factor in the selection of lodge sites. Large lodges are constrained in their location by the requirements for relatively level land, and in the Glenwood locality, these lodges are found mostly on relatively flat stream terraces and on the uplands. Smaller lodges are usually located in a more rugged setting. The bimodal curve for lodge floor area in the Central Plains tradition indicates that two variations in social aggregations occurred. Most of the models cited account for the variability in lodge size by placing one of the two modes earlier in time. The radiocarbon evidence strongly supports the temporal association of large and small lodges. The apparent bifurcation of the settlement is very similar to the seasonal cycles known for the historic farming tribes of the Missouri Valley. These tribes built large, frequently communal summer lodges that were abandoned in the winter when the tribes dispersed and occupied smaller winter lodges located in the timber. In discussing winter lodges among the Hidatsa, Wilson (1934:395) observed the following:

> In its main features the winter lodge closely resembled that built in the summer, though it was quite likely to be smaller and built with less care . . . . Various reasons were given for building such a relatively rough structure . . . . [F]or example . . . the lodge was abandoned at the end of the season [and] . . . it was liable to be burned by any passing enemy, and moreover, that it was quite unlikely that the same camping place would be occupied in successive years. The winter earthlodges were invariably placed close together in the timber . . . .

The similarities to the Glenwood settlement pattern are striking. However, seasonal occupation of the lodges has not yet been demonstrated.

A factor that may have assumed considerable importance in encouraging a seasonal shift in settlement from the lowlands to the uplands in the summers might have been the general environment of the Missouri floodplain and, by extrapolation, the tributary creek bottoms. Orr

(1963, 10:4) observes that "the Missouri bottoms in pre-historic times appear for the most part to have been well timbered, swampy and mosquito infested, with numerous lakes, parts of abandoned channels."

Tabeau's description (Abel, 1939:63) of the hardships endured in the Missouri valley in the summertime is particularly vivid.

> . . . of all the inconveniences and sufferings of the voyage, mosquitoes should be put down as the worst, and nowhere can more be seen. During the whole day the boats were enveloped as in a cloud and the *engagés*, who were compelled by the extreme heat to keep the body naked, were covered with blood and swellings. Often our hunters, not being able to endure them, returned at full speed to throw themselves into the boats . . . . In short, the mosquitoes, not leaving the crew at liberty to take its food in the evening or its rest at night, exhausted it as much as did all the work of the day and they helped not a little to weaken it to the extent . . . there was almost never a full force.

The high breezy bluffs and prairie covered terraces of Keg Creek would have provided a substantial measure of summer comfort for the inhabitants of the locality. These same blufftop residences would prove far less hospitable during the winters as they would have been fully exposed to the bitter winds.

Variability in lodge size within the locality poses questions for future fauna and flora studies to determine if the lodges were seasonally occupied. In addition, one might expect that the ceramics found in the large lodges would exhibit greater variation within the ware groups, especially if Wedel's (1979) population estimate is correct. Lodge 13ML130, for example, could accommodate 34 people according to Wedel's formula.

The above example is only one of many small-scale problems that can be addressed within the Glenwood locality. The emphasis upon locality-specific problems that can be tested and the application of these results to other localities as hypotheses offers a promising approach to the formulation of large-scale synthetic models. Ideally, working from the particular to the general will result in a deeper understanding of the ecological and cultural adaptations of this prehistoric culture.

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Paleo-Indian Winter Subsistence Strategies on the High Plains

George C. Frison

ABSTRACT

This paper suggests that Paleo-Indians utilized caches of frozen meat to survive the harsh winters of the Northern Plains. To keep the meat from spoiling, the Indians necessarily had to kill the bison in late fall or early winter.

Introduction

Few archeologists are concerned with the problems of prehistoric winter survival on the High Plains. Nevertheless, the homesteaders, prospectors, trappers, hunters, explorers, livestock operators, and others who lived through the early days on the High Plains certainly regarded winter as treacherous. Failure to make the proper preparations for winter was playing dangerous odds with serious consequences. Even during the first quarter of this century, such things as insulated footwear, fast, comfortable cold-weather transportation, and easily available, concentrated foods were yet unknown. Few, if any, of the present generation experienced the feeling of well-being that resulted from the availability of simple insulated footgear after World War II. No longer was the person who worked outdoors in winter forced to carefully prepare his or her footgear each day, or else suffer the nagging misery of cold feet. Improper attention to footgear could result in a bad case of frost bite that could cripple an individual for life.

Winters on the High Plains are unpredictable from year to year. One or, especially, a series of easy or "open" winters tended to lead the human occupants into the trap of improper summer and fall preparation. When relatively mild temperatures and light snow cover resulted in a very pleasant winter, human travel was easy, game animals were easily available, and a good share of day-to-day activity could be comfortably carried on outside. On the other hand, severe winter conditions brought on different reactions. Long periods of deep snow, high winds, and below-zero chill factors required a different and very serious approach to avoid extreme discomfort or even loss of life. The assumption here is that these pioneer conditions can be generalized to the Paleo-Indian period.

The only safe survival strategy was to regard each coming winter as bad, and prepare accordingly. This philosophy of winter subsistence required enough food to allow for the most unfavorable conditions; since winters did vary in intensity, there was often some food left. In the case of postulated frozen meat caches in the Paleo-Indian period, the surplus spoiled with the arrival of warm weather. There is some evidence that strongly suggests this was the case.

Late Prehistoric and Historic Winter Subsistence

Drying meat for winter use has been well documented for Indian groups of the historic period.

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Large herbivores were taken in late summer or early fall and the meat products were properly dried and otherwise prepared for winter use. The horse was of utmost importance in the survival strategy during the historic period. The nature of the communal buffalo hunt has been explored by many writers and does not need to be repeated here.

A few simple statements by a White boy, Nick Wilson, who spent about two years with Chief Washakie's Wind River Shoshoni group beginning in August 1856 are particularly revealing with regard to a pattern of winter survival. During the first winter with the Shoshoni on the Jefferson River in Montana, Wilson (Wilson and Driggs, 1919:35) notes:

> Most of the buffaloes by this time had left for their winter range; but once in a while we saw a few as they passed our camp. The Indians did not bother them, however, because we had plenty of dried meat, and for fresh meat there were many white-tail deer that we could snare by handing loops of rawhide over their trails through the willows.

Washakie's group had prepared early for winter and were well aware of what would be available on hoof. Preparations for Wilson's second winter with the Shoshoni were even more revealing (Wilson and Driggs, 1919:62, 68).

> The Indians killed a great many elk, deer, and moose while in this valley, and the squaws had all they could do tanning the skins and drying the meat. I asked Washakie if he was planning to winter in the valley. "Oh, no," he replied. "The snow falls too deep here. After the buffalo get fat, and we kill all we want for our winter use, we will go a long way west out of the buffalo country, but where there are plenty of deer and antelope.
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> ---
>
> Finally the time came for us to begin killing buffaloes for our winter's supply of meat. We did not have to hunt them, however, for we could see them at any time in almost any direction. Many a time I went out with Washakie to watch the hunters kill the buffaloes. Washakie wanted only five and we soon got them; but it took mother and Hanabi a good many days to tan their hides and get the meat ready for winter.

The following comments provide insights on the quantity of food reserves required (Wilson and Driggs, 1919:74).

> When mother and I went to packing up for our return, we found that we did not have pack saddles enough for all of our camp outfit. Besides our tepee, bedding, clothing, and utensils, we had sixteen sacks of dried meat and two sacks of service berries. This was too much for our eight pack-saddles. Mother said that we could get along if we had two more saddles so I told her to use mine for one and I would ride bareback. She did not like to do this, but she finally consented, and another boy let us have his saddle, so we packed ten horses.

The Shoshoni prepared for winter by collecting and drying surplus meat for use in the cold months. The fact that buffalo were around, but not hunted because of an adequate supply of dried meat, argues for a planned accumulation of winter surpluses well ahead of time. The winter presence of the animals was not a dependable event from year to year, hence the accumulation of surpluses early in the season. Wilson's observations are particularly valuable because he was a member of a pioneer family in the Great Salt Lake area and lived through several harsh years under conditions that emphasized the need for careful preparation for winter survival.

The strategy of processing bison for winter use by drying, pemmican manufacture, or some related technique is believed to have some time depth based on archeological evidence. It certainly characterizes the late prehistoric period and probably some of the Archaic period. Animal population studies indicate a high incidence of late summer and early fall bison kills during these time periods on the High Plains (Reher, 1970, 1973; Frison, Wilson, and Walker, 1978) and some form of drying of meat products seems to be the only dependable method of preserving meat taken at this time of year. Drying of meat has the advantage of significantly reducing the bulk and thereby increasing portability and ease of storage. The subjects of meat drying, pemmican manufacture, and daily human caloric requirements have been treated elsewhere (Frison, 1967; Wheat, 1972) and are only mentioned here as part of the discussion, for the central theme of this paper is the Paleo-Indian winter subsistence strategy.

In contrast to the evidence for late prehistoric

and late Archaic periods, our present data for the Paleo-Indian period argue for late fall and winter bison killing based on taphonomic studies of bison kill sites. If these data are correct, Paleo-Indian winter subsistence strategies differed from those of the late prehistoric and late Archaic periods. Enough investigations of High Plains bison kill sites have now been done to propose some testable hypotheses.

The Source of Data

Archeological sites with high visibility on the High Plains are those related to animal procurement (Figure 33). Bison kills dominate the archeological record from Paleo-Indian times until these animals nearly disappeared in the late nineteenth century. Other animals failed to run even a close second in terms of quantity of meat products, except possibly the mammoth during the Clovis time period. Many bison procurement locations were closely associated with stream and arroyo systems that provided topographic features favorable for the trapping and killing of bison. Subsequent geological events regularly covered the remains and provided good in situ preservation. It is unlikely, however, that the lack of proper topographic features precluded bison trapping. Corrals and fences of a highly sophisticated nature were present on the High Plains in the late Archaic period (Frison, 1971), and similar structures were almost certainly within the capabilities of the Paleo-Indian.

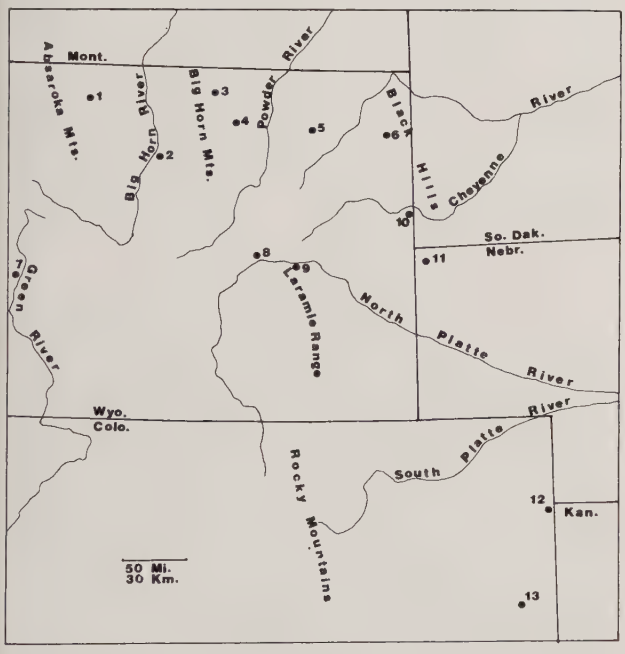

FIGURE 33.—Kill sites on the northwestern and central Plains with seasonal determinations of animal procurement (1 = Horner, 2 = Colby, 3 = Big Goose Creek, 4 = Piney Creek, 5 = Carter-Kerr McGee, 6 = Hawken, 7 = Wardell, 8 = Casper, 9 = Glenrock, 10 = Agate Basin, 11 = Hudson-Meng, 12 = Jones-Miller, 13 = Olsen-Chubbuck)

Geologic events have often operated contrary to the wishes of archeologists. Many periods of erosion and deposition have occurred since Clovis times. As argued by Albanese (1978) with good supporting evidence, there have been major changes in the topography of the High Plains in the past 11,000–12,000 years, particularly along drainages. Lateral and vertical cutting of streams have removed a large share of the total number of archeological sites and, since Paleo-Indian sites have been around the longest, their chances of survival are the least. Other sites are effectively concealed through deposition to the extent that their chances of being discovered either accidentally or through more acceptable practices of predictive models are also low.

Sand dune areas were also favored for past human activity. Large herbivores were attracted to sandy areas because of unique conditions of feed and water. Sand dunes also provided favorable topographic features for trapping animals (Frison, 1974:21–25). Dune fields are also probably the most susceptible of all landforms to destruction. Sandy areas may be stabilized over long periods of time, but even short periods of drought may initiate wind transport with subsequent loss of context of archeological materials and destruction of faunal materials. As a result, we are limited to a small and biased sample of Paleo-Indian sites. However, some patterned behavior is emerging from the sites that are known. Of particular interest are some definite ideas on a Paleo-Indian winter survival strategy that differ

somewhat from those described for the late prehistoric and historic periods.

Analytic Techniques

Faunal analysis has proven to be a valuable interpretive tool in archeological site analysis and the full potential for its use has not yet been realized. Bone beds remaining after the killing and butchering of large numbers of animals are particularly suited for taphonomic study, because they provide large samples of past animal populations to be viewed instead of individuals. In these situations, analysis of tooth eruption and wear can yield reliable indications of the animals' ages. These data can be used in turn to establish seasonality or time of year of events involving large animal kills. The usefulness of this kind of data has been proven in many archeological and paleontological site contexts (Reher, 1970, 1973, 1974; Frison, Wilson, and Wilson, 1976). The method, however, requires large samples and assumes that birthing time has not changed since Paleo-Indian times. A change in birthing time would require either a shift in the timing of the seasons of the year or climatic changes that would have allowed survival of newborn animals other than in the spring of the year. Both of these events seem highly unlikely.

Other methods of age determination need further development. Annual rings in the growth of teeth can be used in many cases and can reveal animal age as well as summer and winter growth. Bone ossification stages may eventually allow closer age determination as osteological studies of various animals are pursued. The osteological study of fetal material is also promising; but the full potential is not yet realized mostly due to a lack of specimens demonstrating the complete range of fetal development.

The chronology of Paleo-Indian occupations on the High Plains is becoming continually more reliable and understood through intensified investigation of new sites and reevaluation of existing data. Reinvestigation of some of the classic type-sites such as Agate Basin and Horner, supplemented by an improved methodology, promises better explanations for data recovered much earlier. The Agate Basin site in east-central Wyoming is a good example. The extensive use of an industrial trenching machine has provided the profiles necessary for geologists to determine that a number of Paleo-Indian components can be tied together through an extinct arroyo system.

In the past it has been the tendency, and justifiably so, based on then available data, to view several of the Paleo-Indian type-sites, and others as well, as being representative of only a single, discrete event of a single cultural complex. It has forced archeologists to view many Paleo-Indian cultural complexes as opportunistic groups who happened to be in the right spot at the right time to fortuitously kill a number of bison, or other animals, exist on the results of the effort, and then simply move on until the same events recurred at another location. However, Paleo-Indian sites related to animal procurement such as Agate Basin (Roberts, 1961; Frison, 1978), Horner (Jepsen, 1953), and Carter-Kerr/McGee (Frison, 1977), all in Wyoming, now suggest more patterned behavior by Paleo-Indians over long periods of time. Some of these locations were used also by human populations representing many cultural complexes.

The Agate Basin Site

The Agate Basin site (Roberts, 1961; Frison, 1978) has been particularly informative, but it has only been through a better understanding of the paleotopography, the erosional and depositional history of the locality, the past vegetation history, and the seasonal determinations through faunal analyses that past cultural activities are becoming better understood.

To establish some basis for reference, the Agate Basin locality needs to be pictured as it probably was during the Folsom through Agate Basin and Hell Gap periods. Clovis evidence is present but does not enter into the present discussion, since the only known component was not a kill site or a winter occupation. Also, although that compo-

nent is located in the same locality, it is in a different arroyo than the one containing the stratified Folsom, Agate Basin, and Hell Gap components.

During early Paleo-Indian times, or probably around 12,000 years ago, the Agate Basin locality was characterized by a deep arroyo with steep banks and a wide flat bottom with occasional barriers in the form of knickpoints, which formed small but effective impediments to large animals moving up and down the arroyo bottom. This arroyo was and still is advancing through headward erosion into a large, relatively flat, Pleistocene surface.

The arroyo was one of several that ultimately formed a small, low gradient and intermittent watercourse known as Moss Agate Creek, which eventually drained into the Cheyenne River. A low but prominent divide separates Cheyenne River and Moss Agate Creek, and from this exposed location the timbered slopes of the southern Black Hills are quite visible across the Cheyenne River. Present at the site, during Folsom times at least, were the heather vole (*Phenacomys intermedius*) and the red-backed vole (*Cluthrionomys gapperi*), which strongly suggest a more shrublike understory at that time in contrast to the sagebrush and grass cover today. Shrubs could have been of importance to Paleo-Indian hunters in providing material to build structures to augment the natural topography for bison procurement.

The old arroyo at the Agate Basin site locality began to aggrade during Clovis times and continued until the youngest known cultural component, Hell Gap, was buried by 3 to 5 meters of alluvium. Studies have not yet been able to determine when the system began to degrade, but old trenches revealed in profiles suggest that when it did, part of the aggraded deposits were removed. This may have been an Altithermal period phenomenon. There are, in fact, some geological deposits present in the site locality that have produced artifact material diagnostic of the Altithermal or early Plains Archaic periods. However, these deposits have not yet been properly studied.

The trenches into the Paleo-Indian alluvium were later filled and another period of degradation began that ultimately produced the present topography. The present main arroyo chose a somewhat different course, which removed entirely some of the older deposits, partially exposed others, and in some places left the old deposits intact. This situation confused earlier investigators, who assigned separate site designations to a large number of Paleo-Indian site exposures that were, in reality, closely interrelated by the arroyo system. Soils and climate provided food for optimum winter range conditions for bison and, in turn, provided ideal topographic features for winter bison trapping.

The old arroyo at Agate Basin was the scene of many separate Paleo-Indian bison kills that varied in the number of animals taken. One Folsom kill, for example, contained about eight animals. The original Agate Basin site component may have contained over 100 animals, but this very likely represented more than one procurement event. The one known Hell Gap component contained between eight and ten bison. As mentioned above, the one in situ Clovis component is in another location and appears to be a spring or early summer camp site. They were utilizing bison but we do not know the means of procurement. However, there is a high probability that further site investigations will reveal Clovis components underlying the other Paleo-Indian components.

The study of bison remains in Folsom, Agate Basin, and Hell Gap components points unequivocally to winter kills. Fortunately, there are adequate samples of young animals and, in addition, fetal material to help establish animal ages at the time of death. It is suggested that the animals were first butchered and then frozen. The units were piled and used as needed. Obviously, the meat piles required protection; evidence suggests that the hunters may have camped alongside the meat piles, withdrawing food as needed. The wide, flat-bottomed arroyo would have provided a satisfactory camping location during the winter months.

Since the kills were in the bottom of the arroyo, spring runoff and flood waters had varying effects on the various cultural components. Some were preserved intact; others were washed out and disturbed to certain degrees; while others were moved out entirely. This also explains satisfactorily the mixing of components observed in many instances at the Agate Basin site, since a slight amount of down cutting at one spot could remove part of an older component and then deposit it further downstream on top of a younger component.

The Horner Site

Further evidence of late fall and winter bison killing is preserved at the Horner site. First regarded as only a manifestation of the Cody complex at about 9,000 years ago, recent investigations have revealed Alberta components going back to about 10,000 years ago. Jepsen (1953) claimed the Cody components to be late fall or early winter kills; the Alberta components are of about the same season or possibly later in the winter.

Paleotopographic studies do not support the former presence at Horner of any favorable topographic features that alone would have formed a trap. We now propose that the apparent favorable location for the animals resulted in construction of an artificial trap. The new evidence from Horner now argues for at least 1,000 years of bison procurement rather than a single event in that locality. This adds a strong measure of continuity to the procurement activities and supports also the idea of planned yearly activities. The concentration of bison bones gave a first impression that it was nothing more than a discarded pile of disarticulated bones. However, as the bottom of the pile was explored, larger units and finally complete animals were revealed. The abrupt ending of the edges of the bone concentration now suggest some containment of the animals. The most likely means for this was probably a corral of heavy logs that would not have required postholes. The cobble terrace would have been especially difficult as a medium into which postholes could have been dug. Freezing of the meat would have been accomplished with no difficulty in late fall and winter.

The Carter-Kerr/McGee Site

A Paleo-Indian site also related to animal procurement is located in the Powder River Basin near Gillette, Wyoming. The Carter-Kerr/McGee site can be understood only in terms of animal behavior in relation to the site topography. Although only a remnant of the site survived the processes of erosion, what does remain provides a record of animal procurement for Clovis through the Cody complex, or for a period of over 2,000 years. Paleo-Indian components present include Clovis, Folsom, mixed Agate Basin and Hell Gap, and mixed Alberta and Cody complex. All are in situ and are in stratigraphic sequence (Frison, 1977).

The site is located toward the head of an arroyo that once flowed into a wide, shallow Pleistocene lake. The arroyo, today, has a wide, flat bottom and steep sides. The bottom is close to the water table and is swampy for a good share of the spring and early summer resulting in a thick cover of tall grasses. Assuming similar conditions in Paleo-Indian times with the added attraction then of the water and grass around the Pleistocene lake, ideal conditions for large herbivores were present. In addition, other arroyos leading away from the lake offered ideal topographic conditions for large animal trapping.

My current interpretation is that the Paleo-Indian components are located adjacent to what was then an animal trap strategically located toward the head of the arroyo. The configuration of the eroding arroyo at any given time determined the exact location of animal procurement activities. This location could have changed from year to year depending upon snow melt and rainfall conditions. In fact, the present arroyo formed a highly efficient animal trap during 1977 (Frison et al., 1978:394), but moisture from an unusually heavy snow pack during the winter of

1977–78 caused the arroyo walls to collapse and significantly reduced its value as a trap without the addition of some sort of restraining structure. However, in 1979, the debris from the 1978 event was removed by runoff during a heavy thunderstorm and it regained the proper configuration for a large animal trap.

The uppermost level (Cody-Alberta) is the only one containing sufficient bison remains to allow for a time of year determination. Aging of the animals based on tooth eruption indicated a winter kill. Included in the bone bed are large, articulated units along with larger numbers of disarticulated individual bones similar to the situation at Horner site that suggests a large meat cache. The incomplete nature of the site, however, made it impossible to determine the complete range of site activities occurring there. The cultural levels below Cody-Alberta were too incomplete to allow aging of the animals. However, the investigators suggest that the older components reflect large animal procurement. The Folsom component at the Carter-Kerr/McGee site is highly reminiscent of the Folsom component at Agate Basin and perhaps both reflect similar cultural activities.

The seasonality of other Paleo-Indian bison kills in and near the Northwestern Plains was also late fall and winter. These include the Casper site during Hell Gap times and Jones-Miller (Reher, 1974:113–124) also of Hell Gap age (Stanford, pers. comm.). The Hudson-Meng site of the Alberta cultural complex was determined to be a late October or November kill (Agenbroad, 1978:30–31). In contrast the Olsen-Chubbuck bison kill (Wheat, 1972) was probably a summer kill (Frison, 1978:291–292), which makes it somewhat of an anomaly among other Paleo-Indian bison kills.

The Hawken Site

Altithermal conditions and their effects on bison still remain largely hypothetical and conjectural. However, we can document the pattern of winter and early spring bison killing at the Hawken site (Frison, Wilson, and Wilson, 1976) in the Black Hills area of Wyoming and South Dakota. At 6,500 to 6,000 years ago, these arroyo bison kills of the Altithermal or early Plains Archaic period appear to be late continuations of the Paleo-Indian pattern. Bison of a size intermediate between those of the Paleo-Indian period and those of the present day were trapped toward the heads of steep-sided arroyos leading away from a large, flat gathering area. The camp area for the Hawken site was not located at the kill since the arroyo bottom was not suitable for a camp. It was probably nearby, however, since the immediate site area presents many favorable camp locations, but is highly eroded due to sandy soils.

The Hawken site is highly reminiscent of the bison procurement situation at the Carter-Kerr/McGee site. Stratified deposits of bison bones at the Hawken site itself and at single component situations in other arroyos nearby suggest a recurring pattern over a long period of time. Radiocarbon dates, 6470±140 B.P. (RL 185); 6270±170 B.P. (RL 437); 6010±170 B.P. (RL 484), further support this contention (Frison, 1978:41). Large samples of ageable bison dentitions provide seasonal determinations.

Possible Clovis Meat Caches on the High Plains

The Colby site in the Big Horn Basin of north-central Wyoming (Frison, 1976, 1978) provides evidence suggesting meat caching during Clovis times. Evidence of site activity was preserved in the bottom of a wide, deep, steep-sided arroyo as the result of aggradation subsequent to the event. As at the Agate Basin site, the arroyo at the Colby site filled with alluvium during late Paleo-Indian times.

At present the site area appears much different from that of Clovis times. Instead of the deep arroyo, the present one is shallow with gentle slopes; lateral tributaries have formed a small, dendritic drainage pattern (Albanese, 1978:381–383). Downcutting has removed all of the Clovis occupation surface except for a small amount in the bottom of the old arroyo. Within this, how-

ever, is contained the partial remains of at least seven mammoths. Evidence indicates that two concentrations of mammoth bone resulted from human activity, although there is no way to determine the actual method of animal procurement.

One bone pile (Frison, 1976) in the center consists of an articulated left front quarter of a nearly mature mammoth. Stacked around this are long bones and other skeletal elements of at least two juvenile mammoths; directly on top of the pile is the skull of a young mammoth. One Clovis projectile point was recovered at the base of the pile and one and probably two bone tools were associated. One side of the pile had been partially collapsed by runoff water. Half of a mammoth pelvis was moved several meters down the arroyo until its forward progress was stopped at a narrow constriction. In the bottom of the arroyo at the base of the bone pile was a split granite boulder probably used in butchering or processing of the animals.

This stacked pile of bones is thought to be a frozen meat cache. If so, it is one that was never opened. The front quarter of a mammoth, weighing several hundred pounds, was placed on a small rise in the arroyo bottom. The other large bones and the skull formed a protective fence around it (Frison, 1978:95–102). The meat evidently spoiled as warm weather arrived.

A short distance (30m) up the arroyo is another pile of mammoth bones containing parts of at least three more animals with one skull included. However, this pile was disturbed and no articulated units were present (Frison, 1978:95). The interpretation here is that this also represented a meat cache but one that had been opened and the meat products retrieved. The concept of frozen meat caches appears to fit the data here better than other explanations.

Discussion and Conclusions

The processing areas associated with the typical buffalo jumps of the late prehistoric and early historic periods on the High Plains are manifested by several readily identifiable features and artifacts. These include stone-heating pits, stone boiling pits, and piles of bone reduced to varying sizes for boiling out the bone grease. Anvil stones and hammerstones were used extensively in the bone crushing and breaking processes. These features and artifacts were clearly portrayed at two sites: Piney Creek and Big Goose Creek at the base of the eastern slopes of the Bighorn Mountains in north-central Wyoming. Cultural affiliations of the two sites are believed to be with the Crow Indians after they had moved to the High Plains as buffalo hunters (Frison, 1967:37–39; Frison, Wilson, and Walker, 1978:1–2).

The bison at these two sites were killed in the early fall by jumping the animals over low bluffs. Processing areas were close to the kill areas. Large numbers of broken bones along with anvil stones, hammer stones, fire pits, stone boiling pits, and fire-cracked boulders strongly suggest the recovery of bone grease in large quantities. The time of year of the kill (early fall) argues against the possibility of freezing the meat so drying was probably being done on a large scale. There is no secure archeological evidence at these sites for meat drying, but ethnographic evidence for this practice during the historic period is abundant. During the early fall, the bison are in the prime condition that provides the thick layer of back fat used in pemmican manufacture. Both dried meat and pemmican provided the necessary surpluses to insure winter survival.

Attempts to apply the same model to Paleo-Indian bison kills have not been successful. The time of year of animal procurement is different. The features and artifacts common to the late prehistoric sites have not been identified. However, when a model of winter killing and freezing of bison meat in large butchered units is used, the data do begin to fit. Further support for this concept comes from sites such as Agate Basin, Horner, and Carter-Kerr/McGee where the locations are in preferred winter bison habitats and the procurement events covered long periods of time.

Winter killing of bison, along with the frozen

meat caches, would undoubtedly have provided the necessary stored food for winter. However, one element would have been lacking, which is the fat on the prime animals of the late prehistoric period killed in the early fall of the year. The desirability of the fat animals is evident in Wilson's account of the Wind River Shoshoni in the mid-nineteenth century. Fresh meat was available in the form of white-tail deer, but the Shoshoni sought out a definite number of bison while they were fat (Wilson and Driggs, 1919:35). The carbohydrates were an important addition to the protein-rich diet of lean meat. How this affected the diet of the Paleo-Indian hunters or whether some other provision for this condition was made is not known. They may have also killed bison for winter use during the months when they carried large quantities of fat. This is, however, a subject to be considered in future Paleo-Indian studies.

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A Critical Review of Archeological Evidence Relating to the Antiquity of Human Occupation of the New World

Dennis J. Stanford

ABSTRACT

This paper summarizes theories of human occupation of the New World and data from archeological sites that support a pre-12,000-year-old settlement of the New World. Many well-known localities and a few sites that have received very little publicity are critically examined to determine if any of the origin theories can be supported. It is concluded that although the evidence is meager, it is probable that humans were in the New World before the widely accepted date of 12,000 years ago.

ACKNOWLEDGMENTS.—I wish to express my appreciation to Paula Cardwell, Elizabeth Beard, Jean Fitzgerald, the late Clifford Evans, Tommy Fulgham, Gary Haynes, Sally Hershey and Robert Lewis who helped with editing, typing, and preparing this manuscript. I would also like to acknowledge that the viewpoints contained in this paper are the results of ongoing discussions with Robson Bonnichsen, George Frison, C.V. Haynes, Richard Morlan, and H. Marie Wormington. However, I am solely responsible for all errors and oversights that occur in this manuscript.

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Introduction

The antiquity of man in the New World is an extremely complex problem. Many archeological sites have been reported that, according to their investigators, have data relevant to settling this question, but most, when carefully scrutinized, lack conclusive evidence. This paper will summarize information currently available to me, discuss the various hypotheses about the antiquity of man in the New World, review some of the more relevant sites that have been published as potential evidence for a pre-12,000-year-old occupation of the New World, and discuss the nature of the evidence found at these sites. Certain Old World cultural traditions, from which the earliest Americans may possibly have been derived, will also be discussed.

Theoretical Background

The theoretical issues can be divided into two viewpoints: (1) Clovis culture (ca. 11,500 years ago) represents the earliest cultural tradition in the New World; or, (2) Clovis or other cultural manifestations of the same age found in the New World were preceded by earlier inhabitants of some, as yet, unknown age. These positions seem simple enough, but the problems associated with each are extremely complex and, due to the lack of specific data, both are plagued with vagaries.

There are two basic positions that have been

published advocating that Clovis peoples might be the first New World immigrants. One, proposed by C. V. Haynes (1978), is based on a cultural-technological model and on the lack of conclusive data to the contrary, while the other is based on a predator-prey-ecological model (Martin, 1973).

C. Haynes (1978:130) points out that many of the technological traits found in Clovis, such as spurred end scrapers, blades, burins, bifacial reduction techniques for working stone, shaft straighteners and cylindrical bone tools, and the use of red ochre may have been derived from the late Paleolithic cultures of Eurasia. In the absence of any obvious precursors, he suggests that Clovis people arrived in the New World already equipped with an Eurasian paleolithic tool kit at some time between 12,000 and 13,000 years ago. In two separate papers, however, Haynes (1969, 1970) suggests that man may have been in North America at least 30,000 years ago and offers a three-period scheme consisting of an early Paleo-Indian stage (greater than 30,000 years old), a middle stage (30,000 to 12,000 years ago), and a late period (12,000 and 7,000 years ago). If so, then scientifically sound evidence for early stages should eventually be found, and can only be verified by an objective examination of stratified sites of the appropriate age.

The other hypothesis calling for a later arrival of man is that of the "Pleistocene Overkill" model (Martin, 1973). It proposes that man entered the New World around 13,000 years ago with a fully developed Upper Paleolithic tool kit equipped to exploit efficiently a new game range; the new arrivals then swept rapidly across North and South America, completely exterminating many of the large animals that could not resist humans as predators.

Computer simulation models of human advance presented by Mosimann and Martin (1975) support this overkill hypothesis; but the entire model is incongruous with basic biological (Odum, 1971) and cultural (Clark, 1968) theories of natural population expansion. A more logical explanation of Pleistocene faunal extinction is that many factors, including hunting by man, were responsible for the demise of these species. The primary cause was no doubt the effects of climatic changes at the end of the Wisconsinan glaciation, which sufficiently altered habitats so that many species, including some that were not hunted by man, became extinct (Graham, 1979:65).

Since there are no known stone projectile points universally accepted as being older than Clovis, some archeologists have proposed a "pre-projectile point" horizon (Krieger, 1964; Willey, 1971). This was first advocated by Krieger (1964:42–51) who contended that people with a core and flake technology, derived from Asiatic sources, were the first to exploit the New World. Unfortunately, the archeological complexes from which Krieger's model was generated did not come from well-controlled or excavated sites. None of Krieger's listed sites can be attributed either to a cultural stage or to a chronological age because most represent quarry detritus.

Müller-Beck (1966), comparing North American assemblages to those from Eurasian collections, divides the Paleo-Indian culture into two distinct technological traditions. The first, characterized by a specialized hunting technology utilizing bifacial projectile points, developed on the open plains of Central Europe during early Upper Pleistocene. It was basically a continuation of the hand-ax traditions, contemporaneous with Mousteroid bifacial and flake-tool industries. The artifact assemblage from the Kostyenki site in the Ukraine is identified specifically as the Old World cultural complex that is typologically closest to the older Llano complex of North America (including Clovis and Sandia). These early industries with specialized projectile points supposedly expanded into the New World between 28,000 and 26,000 years ago. The second invasion, about 11,000 years ago, was primarily that of the Aurignacoid industries. These cultures, having basically a core-blade-burin industry, formed the basis of the later Eskimo and Aleut cultures.

Few data support a spread of complexes with bifacial projectile points down the ice-free corri-

dor to the Northern Plains at such an early date. The Sandia Cave dates, upon which Müller-Beck derives his basal age for older Llano, are not considered reliable (Stevens and Agogino, 1975:22).

The concept that the Aurignacoid industries gave rise to late Eskimo and Aleut traditions is supported by recent excavations at Dry Creek, Alaska (Powers and Hamilton, 1978), Onion Portage, Alaska (Anderson, 1970) and at Bluefish Cave, Yukon Territory (Cinq-Mars, 1979). All support a minimal age of 11,000 years for the American Paleo-Arctic tradition.

MacNeish divides the human occupation of the New World into four hypothetical stages (MacNeish, 1978, 1979a). These stages are divided on the basis of technological attributes of artifacts into "undated probable," "possible," and "dated probable" complexes, based on MacNeish's assessment of the reliability of data from various New World sites.

Stage I (MacNeish's "Undated Probable").—The big game collectors dates from around 70,000 to 30,000 years old and is characterized by crude, large bifacial choppers, cleavers, concave-sided unifaces, and retouched flakes. Sites included in this stage and which will be discussed in this paper are the Ayacucho Pacaicasa, Old Crow, Santa Rosa Island, Lewisville, Levi Rock Shelter (stratum IV), Tlapacoya, El Bosque, and Tagua-Tagua.

Stage II ("Possible").—Unspecialized hunters, dates as old as 28,000 years in North America and lasts up to 10,000 years ago in South America. It includes such sites and assemblages as the El Horno locality at Valsequillo, the Ayacucho complex at Pikimachay Cave and the lowest level at Meadowcroft Rock Shelter, and Los Toldos Cave. Characteristic implements include unifacial projectile points, burin-like tools, large flat flakes with retouched and denticulated edges, as well as bone tools.

Stage III ("Dated Probable").—Specialized hunters, dates from 20,000 years old in North America to 11,000 years old in South America. It is characterized as having bifacial leaf-shaped projectile points, blades, and burins. Sites included in this stage are Meadowcroft Rock Shelter, Wilson Butte Cave, Hueyatlaco locality and Unit E at Valsequillo, and Taima-Taima.

Stage IV.—Ecozonal specialized hunters, dates between 13,000 and 10,000 years ago. Included in this stage are all of the widely recognized Paleo-Indian complexes of North and South America.

Although MacNeish (1979a:2) admits that the evidence for demarcation of these stages is poor, he feels, that the data are sufficient to cause a rethinking of concepts about early man in the Americas.

Alan Bryan (1965, 1977a, 1978, 1979) presents a model of multilinear evolution in which there are independent lines of development of Paleo-Indian technologies. He feels these technological traditions are the result of responses to different environments found in the Western Hemisphere. Bryan's major traditions consist of (1) the Fluted Point, (2) the Stemmed Point, and (3) the Notched Point traditions. All are thought to have evolved from a generalized technological pattern that had its roots in an Old World Paleolithic core, flake, and bone-working technology. This is evidenced in such sites as Texas Street and Calico Hills, both in California.

Thus, there is little disparity among the major interpretations for New World origins as briefly outlined above. Major differences that are initially apparent rest almost entirely with the quality of data that various investigators will accept as evidence for a human occupation site. However, most researchers agree that an early cultural tradition that developed in Asia moved into the Americas with a relatively simple lithic and bone technology.

Criteria for Acceptable Archeological Evidence

The major problems surrounding hypothetical early man sites are the reliability of the radiometric dates, the lack of (or inadequately understood) stratigraphy, and the identification of artifacts or of pseudo-artifacts.

Radiometric determinations are extremely complex, and more research on dating technology needs to be conducted so that the reliability of dates can be assessed. This is true for wood charcoal dates, as well as for the more controversial bone collagen and apatite dates. There is also a need for additional research regarding racemization, paleomagnetism, and thermoluminescence techniques. Given the difficulties with these dating techniques, it is clear that a single radiometric date cannot be considered reliable for dating a site or an occupation level. Nor can dates that have been run on bone or other organic matter be considered accurate until many problems with these techniques are worked out.

Rudimentary flaking is not indicative of any chronological or cultural technological stage. Thus, it is impossible to identify an early cultural tradition on the basis of lithic technology from surface-collected artifacts. Only sites that have precisely dated stratigraphy can be used as evidence for early man.

The major problem is to distinguish artifacts from bone and stone objects that have been altered by various natural noncultural processes. This problem cannot be resolved until well-conceived experiments and studies with sound theoretical and systematic approaches have been conducted. Impressionistic statements merely cloud the literature with misleading and confusing information.

A site must meet the following criteria to be accepted as evidence for a pre-Clovis culture: (1) clearly defined stratigraphy; (2) reliable and consistent radiometric dates; (3) consonance of the data from various relevant interdisciplinary researches; and (4) unquestionable human artifacts in indisputable association. These rigid criteria would eliminate most of the existing sites from any discussion. Nevertheless, in the following paragraphs I will discuss some of the dubious sites, mainly because, they indicate strongly that pre-12,000-year-old occupations might be found in the New World and because most of them have been used by various authors to support the existence of extremely early occupations. My observations are confined to those sites of which I have firsthand knowledge or are published in sufficient detail.

Site Evidence

Recent finds in the Arctic suggest that man may have been in the New World for a much greater number of years than previously recognized (Figure 34). The discovery of a flesher made of caribou bone from the Old Crow Basin in the Canadian Yukon resulted in an increased effort to locate pre-Clovis remains (Irving and Harington, 1973). The caribou flesher, although nearly identical to those used by the modern Athapaskan Indians, was dated to an age of 25,000 to 30,000 years old. Research by Bonnichsen and Morlan (Bonnichsen, 1978, 1979) on the modification of fossil bone indicates that it would have been impossible for this tool to have been manufactured after fossilization.

These discoveries gave impetus for two long-range research programs to be undertaken in the Old Crow Basin. The first was organized by Irving of the University of Toronto and is known as the Northwest Yukon Refugium Project (NYRP), while the second, the Yukon Refugium Project (YRP), was organized by Morlan of the Canadian National Museum of Man. The research teams involved with these projects have spent the last few years diligently searching for evidence of early man in the Yukon (Irving and Cing-Mars, 1974; Irving and Harington, 1973, 1978; Morlan 1977, 1978, 1980) and have produced impressive numbers of fossil remains and paleoecological dates. Unfortunately, the researchers have not been able to locate an in situ occupation level on or within any of the river terraces that they have examined in the Yukon. Instead, nearly all fossils have been found in redeposited contexts along gravel bars of the Porcupine and Old Crow rivers, as well as in buried erosional surfaces. Fewer than a dozen bones have been found in possibly primary depositional context. Some megafaunal bones were modified into unquestionable artifacts while others show signs

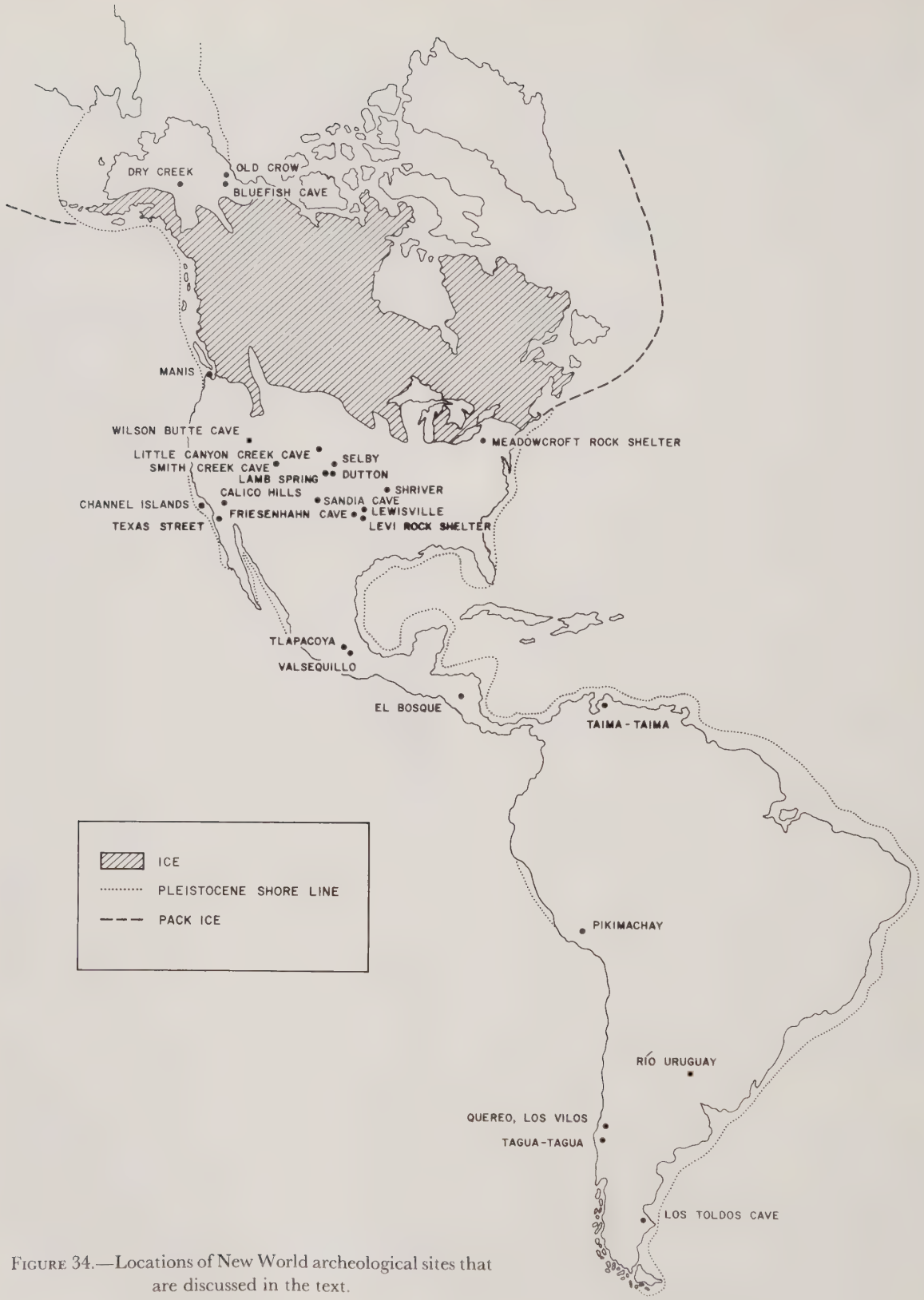

FIGURE 34.—Locations of New World archeological sites that are discussed in the text.

of butchering. Among the unquestionable artifacts are antler wedges, a caribou antler flaking tool, which is nearly identical to specimens from Upper Paleolithic sites of Eurasia (Shovkoplyas, 1965; Mochanov, 1977), a broken antler projectile point, and evidence of a bone-flaking technology including bone cores and utilized bone flakes. A human mandible and possibly domestic dog remains also were found (Irving et al., 1977; Beebe, 1978).

Unfortunately, no in situ reliably dated sites have been found, but there is little question that most of the specimens are of Pleistocene age. Based on stratigraphic correlation with glacial sequences and lake basin sediments, Irving and Morlan estimate that some of these localities would have had human occupations by at least 40,000 years ago, if not earlier (Morlan, 1978, 1980). Morlan (1980:22) reports butchered bone from a stratigraphic unit bracketed between 80,000 years old (date on underlying ash) and 50,000 years old (^{14}C date on overlying peat).

Bluefish Cave I (Cing-Mars, 1979) was occupied several times between 10,000 and 13,000 years ago. While the upper level (containing microblades and burins) is related to the American Paleo-Arctic tradition, the earlier occupation contained chert flakes in association with horses, proboscideans, bison, and other faunal remains, some of which may have been butchered and burned.

One important but controversial site in North America is Meadowcroft, in southwestern Pennsylvania (Adovasio et al., 1975, 1977; Adovasio, Gunn, et al., 1980). In a deeply stratified rock shelter, the lowest suggested occupation level contained a number of small flakes and flake tools and a bifacially flaked projectile point reputedly more that 16,000 years old. The charcoal used in dating, however, appears to have been contaminated by "dead" carbon carried in the ground water (Haynes, 1980). Puzzling, too, is the fact that faunal species are all recent forms, although they extend back to the Pleistocene in that area (Adovasio, Gunn, et al., 1980).

The Shriver site, in northwestern Missouri, could be significant (Reagan et al., 1978). A fluted point associated with end scrapers was found at 30–40 cm below the ground surface. Attribute analysis suggested that the point is closer to Folsom than Clovis in form, although, in my opinion, it could be related to some of the eastern fluted points, which may be later in age than Folsom. The lowest (Peorian) level contained burins, end scrapers, tortoise and tabular cores, and unifacial flake tools. Reagan et al. (1978) suggest that because of a thermoluminescence determination for the fluted point level of 12,855±1,500 B.C., this lower layer must be over 15,000 years old. Unfortunately, this dating technique is highly tenuous and needs to be verified by other sources.

The Selby and Dutton sites in northwestern Colorado (Stanford, 1979) were found in 1975 during the construction of irrigation ponds in topographic depressions. Both have extremely similar stratigraphy, although the Selby site is located on a Pleistocene playa and the Dutton site is on a ponded stream channel. In both, the sequence from the lowest level to the upper is as follows: (1) Peorian loess (estimated age <17,000 years), containing the bones of camel, horse, and bison; (2) a series of lacustrine soils (estimated age is between 17,000 and 12,000 years old), with mammoth, horse, bison, camel, sloth, peccary, and some smaller mammal remains; (3) a gleysol (11,710±150 years B.P. [SI-2877]) which contains mammoth bones, and (4) at the Dutton site, Clovis age artifacts; and (5) Holocene soils, which produced no bones or artifacts.

Many faunal remains appear to have been butchered and many have characteristic impact depressions, which may have been produced by marrow processing activities. Other specimens have flakes removed from the bone diaphyses, which appear to be the result of the production of bone flakes and cores. Specimens that are nearly identical to these have been experimentally produced from the bones of modern elephant (Stanford et al., 1981). Some bones had high gloss polish, fracture edge rounding, and step fractures similar to bone tools found in other late period archeological sites.

Hrdlička (1912) and P'ei (1938, 1939) noted

that natural events, such as boulder fracturing in streams or trampling by animals, as well as carnivore alteration, can break bones in a manner suggestive of human butchering. At Dutton and Selby, however, there are no boulders in the loessial soils, and the deposition of these soils reflects a low energy water system. It is further possible that the bones were trampled by animals coming to water, but it seems unbelievable that animals could break the bones in such consistent patterns.

The location of the center of gravity near the distal end of the fractured specimens may have caused them to sink into wet sediments with only the proximal or pointed end exposed. These exposed ends may then have subsequently been polished by abrasion from water or windborne particles, giving the impression that the bones were used as tools.

Carnivore alteration can also spirally fracture bone (Sutcliffe, 1970; G. Haynes, 1978, 1980; Hill, 1975; Buckland, 1822). Several studies, including the work of Gary Haynes, currently of the Smithsonian, promise to clarify this matter. To date these studies have not shown that carnivores can produce large impact depressions, or flake bones like those recovered at Dutton, Selby, or Old Crow. However, these data remain questionable until additional research in bone modification is complete.

Lamb Spring, located near the South Platte River in Douglas County, Colorado, also may be pre-Clovis. Wedel (1965) excavated the site in 1961 and in a layer below a Cody bison kill, found Pleistocene faunal remains, including mammoth, bison, and camel, which dated to around 13,000 years old. Because no stone artifacts were found in the lowest level, excavation was terminated.

Recently, I noted that many of the bones from the lowest level were broken in a manner similar to those from Dutton and Selby. Consequently, the site warranted further investigation. In 1979, a 33-pound boulder associated with flaked mammoth bone was found in one of the trenches. Since there are no boulders elsewhere at the site, I believe that it was probably brought there for bone processing. Further excavations at this site in 1980 yielded additional data (Stanford, 1981).

Friesenhahn Cave, near Austin, Texas, yielded several chert flakes and a human molar, as well as Pleistocene fauna (Evans, 1961:21). This site has often been mentioned as possibly pre-Clovis (MacNeish, 1978, 1979a). However, subsequent analysis of the deposits by Russell Graham (1976) has demonstrated that the cave was occupied by Scimitar cats rather than by man. All of the faunal remains from this deposit show evidence of having been chewed by these large, lionlike cats. Further, all of the chert flakes were found in a talus cone directly below the cave opening and are presumed to have washed into the cave from an extensive occupation found on the ground surface around the opening. It is Graham's conclusion that the cave was not occupied by man.

Another Texas site that should be discussed is the Levi Rock Shelter (Alexander, 1963). This site has several occupation levels, with two presumed pre-Clovis levels underlying an occupation that has been identified as Clovis (Alexander, personal communication). The earliest pre-Clovis level is cemented into the back of the cave by a travertine deposit and was partially eroded. The subsequent pre-Clovis occupation occurs in unconsolidated cave fall and detritus. Stone tools in the form of utilized flakes were recovered from these older units. The stratigraphy of this site is extremely complex and is complicated by a tremendous mass of unconsolidated roof-fall, which makes interpretations of occupation horizons nearly impossible. The cave travertine is currently being deposited along the walls of the rock shelter, and its interface with recent unconsolidated fill cannot be considered a time horizon marker. Future work should explore more of these early occupation levels and clarify the relationship between these geologic phenomena and the various occupations of the cave.

The Lewisville site in Denton County, Texas, was first excavated by R. King Harris and Wilson Crook between 1951 and 1957 (Crook and Harris, 1957). Twenty-one burned areas were identified

as hearths, along with several artifacts including a Clovis point, a chopper, and several flake tools. Faunal and floral remains indicate a variety of time horizons. Numerous radiocarbon dates indicate that the burned features were essentially devoid of radioactive carbon and were thus over 40,000 years old (Crook and Harris, 1962).

The Clovis projectile point at Lewisville was presumed to have been a plant. Some prehistorians have suggested that the hearths really represent burned pack rat nests (Heizer and Brooks, 1965) or even burned tree stumps. The remaining "artifacts" were considered to have been washed into the soil matrix from higher terraces. The site, inundated by reservoir waters during excavation, has been controversial for twenty years.

In 1978 a drought in central Texas brought the level of Lewisville Lake down below the level of the hearth area. At that time, Larry Banks and Robert Burton of the United States Army Corps of Engineers made additional discoveries that led me to reexcavate the site in 1979 and 1980. Research was terminated when heavy rainfall brought a rise in the water level. However, the brief excavation did yield some interesting data which will allow for tentative interpretations.

Two independent laboratory analyses, one from the University of Illinois at Urbana and one from Harvard University, indicate that the burned areas contained lignitic coal. Thus, the early ^{14}C dates can be rejected. Lignite is found in the Woodbine formation one-quarter mile to the west and may have been brought to the site by man.

Additional faunal and floral remains were found in and around the hearth areas. Several small flakes made of local quartzite, Edwards Plateau chert, and Alibates dolomite from the Texas Panhandle were also found associated with the burned areas. The cross-sections of the burned areas indicate they are indeed hearths. I think that the stone artifacts found by Crook and Harris are associated with these hearths, and the Lewisville site is probably a Clovis campsite.

Intensely worked localities in southern California include Texas Street (Carter, 1957), and Calico Hills (Leakey et al., 1968; Simpson, 1978). Major problems with the sites center around the age of the deposits and the doubtful status of the recovered specimens as artifacts (Haynes, 1973).

Suffice to say that a few of these stone objects do resemble artifacts (Leakey et al., 1968; Bryan, 1978). Given the nature of the chert-bearing deposits, however, they must be viewed with a certain amount of skepticism. Publication of definitive geological work, sound dates, and evidence for hearths would allow definitive statements.

The Channel Islands off California have also been described as having early fire hearths associated with the burned bones of Pleistocene fauna dating between 11,000–37,000 years ago (Orr, 1968). However, the finds may be situated in a redeposited context. The weathered bedrock sediments have been oxidized to the same color as burned earth, making it difficult to distinguish hearth features. Further, the alluvial sequences on Santa Rosa Island contain abundant charcoal from natural fires (Johnson, 1980a:110–111; 1980b:117–118). As the mammoth bones, stone tools, and putative hearths were also found on erosional unconformities, additional work is needed to clarify the nature of the human occupation of the Channel Islands.

At the Manis site, on the Olympic Peninsula, a bone object tentatively identified as a projectile point was found inbedded in a mastodon rib (Gustafson et al., 1979). Although bone growth around the intrusive object indicated that the wound was inflicted a number of months before the animal died, the remains appeared to have been butchered. Along with the butchered remains, a cobble spall tool was recovered.

Two radiocarbon dates suggest that the site is around 12,000 years old. These dates were derived from seeds, wood, and other vegetal remains that were found in the bone-bearing alluvium.

If the association of the cobble tool, the presumed projectile point and the organics (presumably accurately dated) can be demonstrated, then there is a clear-cut case for hunting mastodon in the Pleistocene of the Northwest Coast. It is not

possible, with the presently available data, to place the Manis site into any cultural framework.

Smith Creek Cave in eastern Nevada has been reported to have had an occupation that is 12,000 years old (Bryan, 1977b). This is a stratified site in which stemmed points, similar to Lake Mohave as well as Haskett and Cascade points, were recovered from the earliest occupation levels. These artifacts were found in association with other silex tools, such as end scrapers, a variety of micro-tools and a few bone artifacts. The only remains of an extinct species of mammal is *Hemiauchenia* hair, which was identified by comparing the Smith Creek samples with those of guanaco.

Thirteen radiocarbon dates suggest an antiquity ranging from 12,000 years ago to 9,000 years ago. Bryan (1977b) contends that the two dates contemporaneous with Clovis and the camelid remains demonstrate that there were two completely different projectile point traditions in western North America between 11,500 and 11,000 B.P.: Mount Moriah from Smith Creek Cave and Clovis. The other eleven carbon dates are more in accord with dates of similar traditions found in the Great Basin; thus, I see little evidence to support the putative antiquity of the Mount Moriah tradition.

Carbon-14 dates of 14,500±500 B.P. and 15,000±800 B.P. from Wilson Butte Cave in Idaho (Gruhn, 1965) are somewhat tenuous, because material used in dating represents a pooled collection from three excavation squares.

A promising site, Little Canyon Creek Cave in the Big Horn Mountains of Wyoming (Shaw and Frison, 1979) contains a cultural unit that lies below a level dated at 10,170±250 B.P. This early level produced remains of musk ox (*Symbos*), collared lemming (*Dicrostonyx*), and an artifact assemblage that includes crude flakes, cores, and possible bone tools. Unfortunately, no charcoal was found in the deposits; but certainly, this occupation is older than 10,000 years and the lithic tools are not similar to either Clovis or Folsom, both of which are well represented in the Big Horn Basin. Several other rock shelters in the area also show indications of pre-Clovis occupation, but they await full-scale testing.

Turning to Latin America, there are a few locations that are very close in age to Clovis. I have had the opportunity to visit some of them or to study the artifacts firsthand: Valsequillo and Tlapacoya, Mexico; El Bosque, Nicaragua; Taima-Taima, Venezuela; Pikimachay Cave, Peru; Tagua-Tagua and Quereo, Los Vilos, Chile; Los Toldos Cave, Argentina; and Río Uruguay sites in Río Grande do Sul, Brazil.

Valsequillo Reservoir, located near Puebla, Mexico, produced some of the most promising evidence for an early occupation of the New World. Excavated by Irwin-Williams during the early 1960s, it consists of five localities that may demonstrate a continuum of occupation from around 21,000 years ago up to later occupations (Irwin-Williams, 1967, 1973). The earliest occupation units contain unifacial flake tools and projectile points made on flakes and shaped with crushed edges associated with butchered late Pleistocene fauna, including mammoth, mastodon, horse, camel, antelope, bison, and several smaller species.

The major problem in interpreting these localities is the lack of conclusive dates. A date of 21,850 B.P. derived from shell is the only radiocarbon date from any of the localities. Correlations of volcanic ash deposits (some of which are above occupation levels in which bifacially flaked artifacts were found) using both tephrochronology and neutron activation are in the magnitude of over a quarter of a million years (Steen-MacIntyre et al., 1973). The vertebrate paleontological remains which Graham (1978) describes from these localities are late Pleistocene forms and not of the antiquity suggested by the tephra dates.

Eighteen localities, known collectively as Tlapacoya, have been excavated in the Valley of Mexico (Lorenzo, 1972; Mirambell, 1978). Several of these localities produced unquestionable artifacts associated with Pleistocene fauna and fire hearths dating to 24,000±4,000 and 21,700±500 B.P.

At Locality I, three hearths, a bifacial obsidian projectile point, three obsidian flakes, as well as more than 2,500 andesite flakes and blades were

found. At Locality II, a prismatic obsidian blade was recovered, which appears to be much later in age than the date would suggest. Again, the basic problem is the dating of the hearths and the possibility that some artifacts were found out of statigraphic context.

The El Bosque site in Nicaragua (Gruhn, 1978; Bryan, 1979; Espinosa, 1976) contains a number of tabular chert objects flaked at the edges. Associated faunal remains include mastodon and sloth. Several bone apatite and collegen dates suggest an age between 18,000 and 30,000 years. In January 1974, I observed that none of the bones showed evidence of human modification. The chert "artifacts" found with the bones come from an outcrop located adjacent to the site where it occurs in veins that, when weathered, break out in tabular pieces with crushed edges identical to the presumed stone tools found at the site. A landslide (Page, 1978) may have mixed the chert and faunal remains into a boulder slide field. At the present time, I view El Bosque as nothing more than a very interesting paleontological site.

In El Jobo, Venezula (Cruxent, 1956; Rouse and Cruxent, 1963; Bryan et al., 1978), artifacts have been found on the terraces of the Río Pedregal for many years. However, the main excavated site is the Taima-Taima locality, a spring site where remains of mastodon were possibly associated with El Jobo projectile points. Radiocarbon dates on organic matter indicate an age of around 14,000 years. If so, El Jobo represents a lithic projectile point tradition earlier than Clovis. This conclusion would mean that there were at least two cultural traditions in the Western Hemisphere and would support the multilinear evolution model proposed by Bryan (1978). The El Jobo points are highly reminiscent of later projectile point styles from many areas of Latin America.

Since Taima-Taima is essentially a bog deposit, association of artifacts, faunal remains, and dated organic material could be fortuitous due to mixing of saturated sediments. Hopefully, there exist other El Jobo sites in which early dated hearths, artifacts, and Pleistocene faunal remains can be found in unquestionable association.

Pikimachay Cave in Peru has received much attention in the recent literature (MacNeish, 1971, 1979b). Based on bone dates from overlying levels, the earliest complex (Pacaicasa) is reputed to range from over 20,000 years to about 14,000 years ago. Artifacts from this stage have been identified as large, crude bifacial and slab choppers, cleavers, hammers, scraping planes, and crude scrapers or spokeshave-like objects. Faunal remains included sloth, horse, deer, and giant cat. According to Lynch (1974:459) most of the so-called tools are merely angular rock fragments fallen from the walls of the cave itself, and it is difficult to prove that they were used as tools.

The artifacts from two strata overlying the Pacaicasa levels have been grouped together to define the Ayacucho complex occupations. These occupations have a number of radiometric dates that cluster around 14,000 to 12,000 years old. Artifacts include scrapers, spokeshaves, burins, denticulates, unifacial projectile points, and bone tools. Associated fauna include sloth, horse, and camel, as well as the remains of more modern forms. If these dates and the associations are correct, then there is little question that man lived in the Andes long before the first fluted point was made in North America.

The Tagua-Tagua site, Chile, with an early carbon date of 11,430±320 B.P. (Montane, 1968), represents a kill site in which mastodon, horse, and deer bones are associated with unifacial flake tools. There is no question as to the association of the artifacts with the faunal remains, especially the butchered bone. The single date should be supported with others.

During excavation for a deep well at the turn of the last century the Quereo, Los Vilos site in central Chile had produced mastodon bones. The bones were placed in the Museo de Historia Natural, Santiago, Chile, and published by Sundt (1903). They received little attention until a radiocarbon date of 9,100±300 B.P. was published (Paskoff, 1971) and later the Chilean archeologist, Julio Montane, began a cooperative program with the Smithsonian Institution in 1972 and reexamined the bones. With archeologist C. Bahamondes, he conducted test excavations in 1973

and defined Pleistocene lake deposits containing megafauna in the lowest levels associated with chips and flakes and possible stone tools. In 1975, 1977, and 1978 Lautaro Nunez, geologist Juan Varela, and paleontologist Rodolfo Casamiquella made extensive stratigraphic excavations. I visited the site in 1976 and later examined the stone materials and bones and noted possible butchering marks and evidence of possible breakage by man. Now six radiocarbon dates based on charcoal from two different laboratories give a range of 11,600 to 10,925 B.P. It is hoped that a final report detailing these interdisciplinary studies of this locality will soon be forthcoming, which will allow for careful scrutiny of the significance of this site.

On the Río Uruguay along the international boundary of Argentina and the state of Río Grande do Sul, Brazil, Eurico Th. Miller from 1965 to 1979 had found 16 sites where lithic materials were found in association with extinct Pleistocene fauna at a depth of 5.5 to 6.8 meters below the present surface, overlain by a sterile stratum (Miller, 1969). Nine dates, from six sites, range from 12,690 to 11,555 to 10,180 B.P. Additional research is urgently needed in this significant area since planned hydroelectric dam construction may threaten the sites involved.

Los Toldos Cave is located in Southern Argentina (Cardich et al., 1973; Cardich, 1978) and has produced a long stratified cultural sequence. The lowest level, contained a number of well-made unifacial artifacts. One has been described as a single-shoulder projectile point; however, my impression from a cursory examination is that it should be classified as a knife. Nevertheless, these artifacts were found in clear association with Pleistocene fauna. Charcoal collected from the occupation level produced a single radiocarbon determination of around 12,000 years B.P. Additional work needs to be conducted in order to verify this radiometric age determination.

In summary, many of the sites discussed above, including Calico Hills, Texas Street, Lewisville, Friesenhahn Cave, El Bosque, and the proposed Pacaicasa complex of Pikimachay Cave in Peru have too little convincing data to be considered significant in this assessment of the antiquity of man in the New World. The evidence from the Dutton, Selby, and Lamb Spring sites in Colorado, as well as the localities found on the Channel Islands of California also is extremely tenuous. If the fractured chert and bone and burned areas found at these sites can be shown to be by-products of human activity, they will figure more significantly into discussions of New World origins.

The remaining complexes or localities contain conventionally acceptable archeological assemblages. However, the critical questions concern the reliability of the age assessments and the artifact associations. Future work should more accurately define their place in New World prehistory.

Speculation about New World Origins

At present this speculation about New World origins has to be based entirely on technological attributes of the artifacts that have been recovered at selected archeological sites. This is at best a hazardous exercise, inasmuch as the combined total of all of the tools found at these sites is extremely small, and all the tools were no doubt task-specific and were not representative of whole technologies. Thus, the entire complexion of the nature of the evidence might change with future research.

The best evidence for the oldest known New World occupation comes from Latin America, where numerous sites seem to date earlier than Clovis in North America. The date of 20,000 years and the unifacial flake tool assemblage sequence from Valsequillo (Mexico) indicate that a core and flake tool technology was used by the earliest New World culture. A flake/core industry seems to have persisted for a long time in Latin America as evidenced by the unifacial tools found at Pikimachay, Tagua-Tagua, and Los Toldos Cave in southern South America.

Presumably when a site of the appropriate age is found in the Arctic, it will contain similar core

and unifacial flake tools, as well as the flaked bones similar to those found at the Old Crow localities. Although lacking the support of radiometric dating, the artifacts found at Little Canyon Creek Cave (Wyoming), the Shriver site (Missouri), and Levi Rock Shelter (Texas) fit well into a core and flake industry.

The spatial and temporal development of bifacial reduction techniques is yet another question. Whether or not bifacial technology developed independently in the New World or was a Eurasian import is highly speculative. The bifacial projectile points found at Meadowcroft, Hueyatlaco (Valsequillo), and Taima-Taima have no well-documented counterparts or prototypes at a sufficiently early age in Eurasia. This would support a New World origin for this reduction technique. To say that Clovis may have developed from it is pure speculation. Nevertheless, since it is possible that bifacial lanceolate projectile points did exist in the New World just prior to the advent of Clovis, perhaps fluting did develop out of this earlier technology and perhaps as a response to a different cultural strategy adaptive for hunting in grasslands rather than forested environments. These thoughts to a certain degree accord with Bryan's model of multilinear evolution, in which there are regional and temporal specializations.

Is there any evidence in Eurasia to support a model from which a core and flake industry may have been derived prior to 12,000 years ago? Unfortunately, the data from northwestern Asia are equally plagued by vagaries as are the American. However, Soviet archeologists working in Siberia (Figure 35) are beginning to establish a long archeological sequence which may extend into Pleistocene as far back as 35,000 years ago. Two basic Pleistocene cultures identified in Siberia are pertinent: the Proto-Diuktai and the Diuktai complexes (Mochanov, 1977). These complexes contain basically unifacial artifacts, although an occasional "bifacial" tool has been noted. The tool kit also consists of large pebble cores and choppers, wedge-shaped cores and microblades, multifaceted burins, as well as a very small number of bone tools (excluding the flesher) similar to specimens from Old Crow, Yukon. These artifacts have been found in association with bones of Pleistocene species, such as mammoth, horse, bison, and woolly rhino.

The Proto-Diuktai stage is thought to date to as early as 35,000 years B.P. Some sites that are considered Proto-Diuktai are Ezhantsy (Mochanov, 1973), horizons B and C of Ust'Mil', which date 30,000±500, 33,000±500, and 35,400±600 B.P. (Mochanov, 1973, 1977), horizon B at Ikhine I, which is thought to be around 34,000 years old, and horizon C at Ikhine II, which dates to earlier than 31,000 years old (Mochanov, 1977).

Diuktai Cave, is located on the Diuktai River in the Aldan River Valley of northern Siberia (Mochanov, 1977). The basic difference between Proto-Diuktai and Diuktai is that the production or use of microblades compared to other tools becomes much more frequent through time. The Diuktai stage is thought to date between 18,000 and 11,000 years old.

Mochanov postulates at least two migrations of Diuktai into the New World (Mochanov, 1978). The earlier, which took place between 33,000 and 18,000 years ago, most likely gave rise to Clovis; a later migration, which dates between 18,000 and 11,000 years ago, resulted in the American Paleo-Arctic traditions.

If the dates for Proto-Diuktai and Diuktai accurately reflect the age of the artifacts that have been assigned to these stages, then it is possible that Diuktai was the ancestral population for the New World cultures. However, the postulated ages of the Proto-Diuktai stage in Siberia have not been accepted by some Soviet prehistorians (e.g., Abramova, 1979). It is possible that Proto-Diuktai is no earlier than 20,000 years old, which is near the upper age limit of the supposedly descendant Diuktai stage. Because, as Diuktai developed, there is apparently an increasing frequency in the use of microblade cores, microblades, and burins, and this degree of use of microblades and cores is not found in Clovis technology, I suggest that the initial tie between

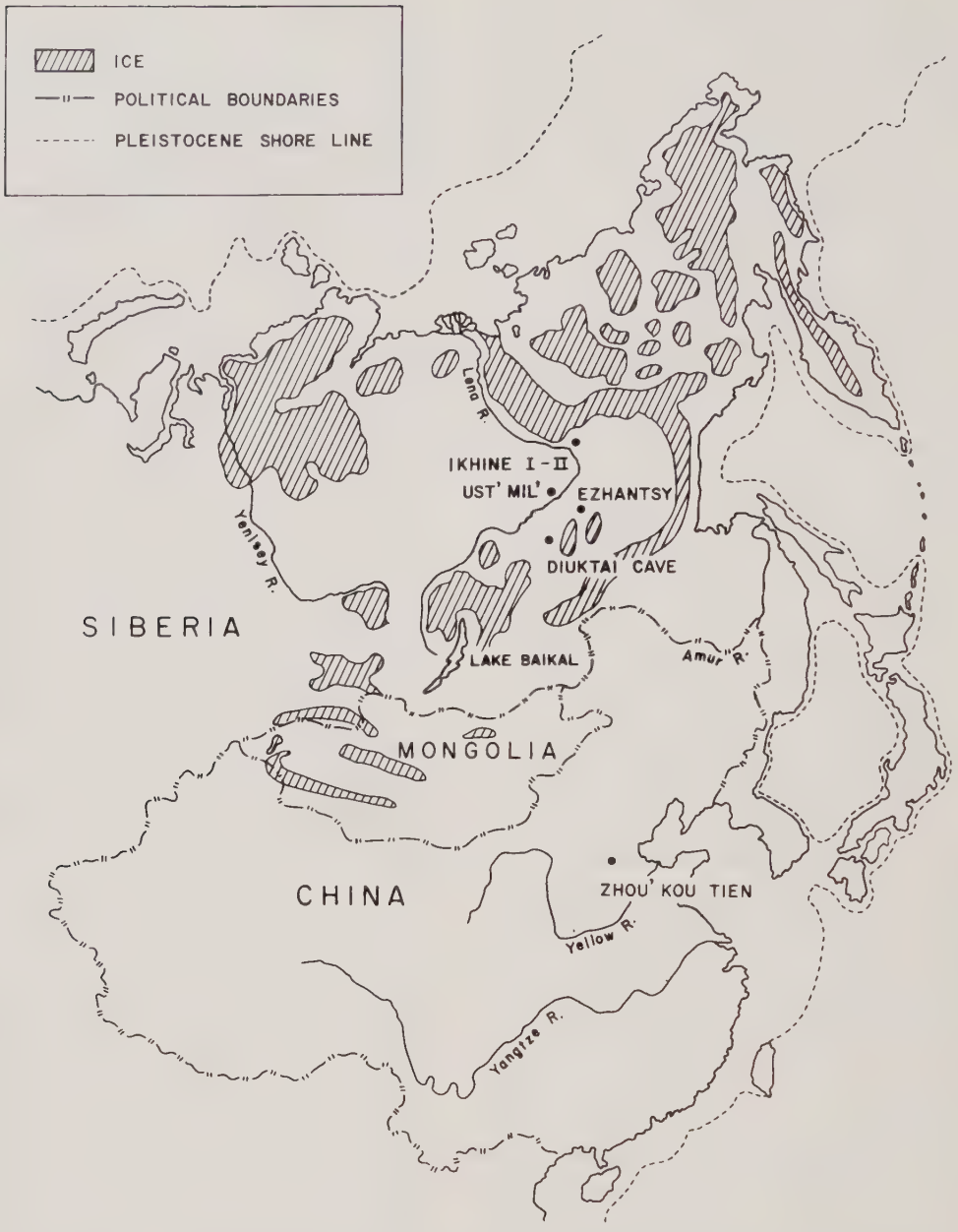

FIGURE 35.—Locations of Asiatic archeological sites that are discussed in the text.

the New World population and that of Siberia was at the early end of the Diuktai time scale rather than at a later period. In fact, I think that the initial tie may have been more in the nature of a common cultural ancestor that moved into Siberia from east Central Asia.

The basic assumptions in this paper are that native American populations originated from a generalized mongoloid racial stock that was developing in Asia during the late Pleistocene. It is assumed that these people were bands of hunters and foragers who had adapted to the big game hunting economy afforded by the steppe-tundra biome. This biome existed in Central Asia and

extended across Beringia to perhaps as far south as Mexico (Matthews, 1976; Hopkins, 1976). This population, which developed during the period between 40,000 and 30,000 years ago, moved northward into Siberia, bearing a core and flake technology that eventually gave rise to the Diuktai cultures, as well as to the earliest American cultures. Perhaps, as Müller-Beck (1966:1191) suggests, there was an amount of cultural and biological exchange between these peoples and eastward-advancing Mousteroid cultures. This would be supported by Birdsell's (1951) concept that the original New World population was a blend of primitive caucasoids with a generalized mongoloid strain.

The problems associated with resolving these questions are complex and require multidisciplinary research designs. However, archeologists must continue to search for and excavate sites of the appropriate ages that hold promise for resolving these questions—a sometimes very frustrating endeavor.

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